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ABSTRACT

Title of Dissertation: The Effects of False Physiological Feedback on Sexual Arousal in Sexually Dysfunctional and Functional Males

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According to a recent model of psychogenic erectile dysfunction (Sbrocco & Barlow, 1996), dysfunctional performance results from focusing on negative outcome expectancy and low confidence following a discrepancy between expected and actual performance. The purpose of the current study was to manipulate the experience of sexually functional and dysfunctional males to produce a discrepancy between expected and actual performance. Fifty-six sexually functional and 57 sexually dysfunctional men were assigned to one of four groups (negative feedback, neutral feedback, inflated feedback, or no feedback). Penile tumescence was recorded while viewing two 5-minute erotic videotapes. All participants viewed film 1 without feedback. Next, the feedback subjects were told the average score for an erection and were asked to predict the score they would receive during film 2 and how confident they were. While viewing film 2, the negative feedback group received feedback that their scores were below their prediction, the neutral feedback group received feedback that their scores were what they predicted, and the inflated feedback group was shown their scores were higher than predicted. After film 2, they were again asked to predict their scores on a subsequent (bogus) film and rate their confidence.

Contrary to the Sbrocco and Barlow model, positive feedback decreased tumescence for both the dysfunctionals and functionals. This occurred, despite an increase in expectancy, confidence, and self-reported arousal. Also in contrast with the Sbrocco and Barlow model,

negative feedback resulted in decreased outcome expectancy but did not induce a change in tumescence for the dysfunctionals. Finally, negative feedback unexpectedly resulted in decreased tumescence for the functionals.

The only variable that predicted changes in tumescence was the self-reported level of surprise concerning the feedback. For both the dysfunctionals and functionals, the feedback groups that experienced a decrease in tumescence were more surprised by the feedback than the groups that experienced no change in tumescence.

In conclusion, the present study found that positive expectations for and confidence in functional sexual performance may be necessary but not sufficient factors for successful tumescence. Positive outcome expectancies and confidence may only be useful if the man is not surprised by his performance.

THE EFFECTS OF FALSE PHYSIOLOGICAL FEEDBACK ON SEXUAL AROUSAL IN SEXUALLY DYSFUNCTIONAL AND FUNCTIONAL MALES

by

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Dissertation submitted to the Faculty of the
Department of Medical and Clinical Psychology Graduate Program of the
Uniformed Services University of the Health Sciences
In partial fulfillment of the requirements for the degree of
Doctor of Philosophy 1999

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Part I: Introduction

The past 15 years have witnessed scientific breakthroughs that have radically transformed the knowledge base and clinical management of erectile disorders. Yet, at the same time, there continues to be a gulf in information transfer between basic research and clinical management. What we do know is that a sexual situation involves the integration of information from various sensory modalities and sources. Information is internally and externally generated and cognitively processed in order to produce a sexual response. Obtaining and maintaining an erection is a complex process that requires not only normal physiological responding, but also functional cognitive and behavioral skills. This is complicated by the cultural backdrop which provides a backdrop of unrealistic expectations and consequences for poor performance.

In a sexual situation a man monitors and adjusts his level of arousal in order to maintain an appropriate erectile response. Clinically, individuals with psychogenic erectile dysfunction appear deficient in arousal regulation (Sbrocco & Barlow, 1996). Further understanding of this phenomenon would be important in validating a useful psychological model of erectile dysfunction and in developing clinical applications of mechanisms of this model. The proposed research seeks to examine how arousal regulation differs between sexually functional and dysfunctional men. It is expected that a better understanding of arousal regulation will have clinical implications in the prevention and treatment of erectile dysfunction. The following sections address the definition, diagnosis, and prevalence of erectile dysfunction, followed by current theoretical models of erectile dysfunction.

Definitions of Sexual Function and Dysfunction

This proposal will employ the term "erectile dysfunction" as opposed to "impotence." Webster's II Dictionary (Soukhanov, 1994) defines "impotent" as "1. Lacking strength or vigor;

weak. 2. Powerless; ineffectual. 3. Lacking self-restraint." This label has been objected to because of its pejorative implications and lack of precision. The National Institutes of Health (NIH) Consensus Development Conference advocated that the term "erectile dysfunction" be used in place of "impotence" and defined it as the "inability of the male to achieve an erect penis as part of the overall multifaceted process of male sexual function" (NIH, 1992). This definition also de-emphasizes intercourse as the sine qua non of sexual life and gives equal importance to other aspects of male sexual behavior. Now that we know what to call it, let's turn out attention to how to define and diagnose the problem.

Current approaches to defining sexual function and dysfunction are heavily influenced by recent biomedical research and clinical practice. Human sexual functioning, for most people on most occasions, is conceptualized as a sequential process. This axiom, accepted by most experts in human sexuality, has its formal beginning with Havelock Ellis (1906), who postulated that sexual functioning has two stages: tumescence (i.e., the engorgement of the genitals with blood resulting in erection in males), and detumescence (i.e., the outflow of blood from the genitals following orgasm).

William Masters and Virginia Johnson are credited with further development of this model. During the 1950s and 1960s, they conducted an extensive series of scientific observations of sexual activity with human volunteers. Based on their research, Masters and Johnson (1966) delineated 4 stages of sexual response in their seminal text *Human Sexual Response*: (1) excitement, (2) plateau, (3) orgasm, and (4) resolution. The model they provided was instructive and elegant, forming the basis for the model of sexual responding over the past 3 decades.

In the decade following the publication of *Human Sexual Response*, it became increasingly clear that there was a fifth "stage" preliminary to the excitement phase identified and

described by Masters and Johnson (1966) (ref. Kaplan, 1974; Lief, 1977). This preliminary stage, subsequently labeled sexual "desire," involves a person's cognitive and affective readiness for, and interest in, sexual activity. Without sexual desire, physiological and subjective arousal, and subsequent orgasm were much less likely to occur. This stage was most apparent to those practitioners working with not-so-well-functioning individuals (e.g., Kaplan, 1979; Lief, 1977) who complained of an inability to become amorous, of a lack of interest in sex, or even of an aversion to sexual activity. Table 1 summarizes the physical changes that occur in the male during the five stages of the sexual response cycle, according to Masters, Johnson, and Kolodny (1994).

Subsequent theoretical writing and empirical research have served as the basis for our current understanding of sexual function and dysfunction. Most sex researchers agree that healthy sexual functioning comprises three primary stages: desire, arousal, and orgasm. Sexual dysfunction, then, consists of an impairment or disturbance in one of these stages (APA, 1994). Although this stage model is somewhat arbitrary, in that it identifies discrete stages in what may well be a continuous process, it provides a useful heuristic from which to conceptualize and discuss sexual health (Wincze & Carey, 1991). Not surprisingly current diagnostic schemes rely on this model.

Male Erectile Disorder: The Current Diagnostic Scheme

The Diagnostic and Statistical Manual of Mental Disorders (DSM) diagnostic schemes have been the most widely adopted for sexual dysfunctions (DSM-III, DSM-III-R, DSM-IV; APA; 1980, 1987, 1994). As depicted in Table 2, the diagnoses have been formulated according to the corresponding stage of functioning: desire, arousal, orgasm, and pain.

The DSM-IV (APA, 1994) lists Male Erectile Disorder as one of the nine major diagnostic categories for sexual dysfunctions. Table 3 lists the diagnostic criteria for Male Erectile Disorder. The essential feature of Male Erectile Disorder is a persistent or recurrent inability to attain, or to maintain until completion of the sexual activity, an adequate erection. In addition, the disturbance must cause marked distress or interpersonal difficulty. This specifier was made explicit with the DSM-IV (APA, 1994) and is an important consideration given the prevalence of transitory difficulties in erectile functioning. Subtypes are provided to indicate the onset, context, and etiological factors associated with the Sexual Dysfunctions.

The onset is characterized as either "lifelong" or "acquired." The lifelong subtype applies if the sexual dysfunction has been present since the onset of sexual functioning. The acquired subtype applies if the sexual dysfunction develops only after a period of normal functioning.

In addition, the context of the dysfunction is delineated as "generalized" or "situational." The generalized subtype applies if the sexual dysfunction is not limited to certain types of stimulation, situations, or partners. The situational subtype applies if the sexual dysfunction is limited to certain types of stimulation, situations, or partners. For example, it is not unusual for an impairment to occur during sexual activity with a partner but not during masturbation.

Lastly, etiological factors are characterized by identifying the dysfunction as "Due to Psychological Factors" or "Due to Combined Factors." Male Erectile Disorder is described as Due to Psychological Factors when psychological factors are judged to have the major role in the onset, severity, exacerbation, or maintenance of the problem, and general medical conditions and substances play no role in the etiology.

The subtype, Due to Combined Factors, applies when 1) psychological factors are judged to have a role in the onset, severity, exacerbation, or maintenance of the Sexual Dysfunction; and 2) a general medical condition or substance use is also judged to be contributory but is not sufficient to account for the Sexual Dysfunction. An example of combined factors is a man who both experiences erection difficulties due to reduced peripheral blood flow as a result of taking an antihypertensive medication (Beta blocker) for high blood pressure, and who also has become anxious about losing his erections (which interferes with his ability to enjoy sex and become mentally aroused).

When psychological factors are judged not to have a role in the onset, severity, exacerbation, or maintenance of the problem and a general medical condition or substance use (including medication side effects) is judged to completely account for the problem, a diagnosis of Male Erectile Disorder is not appropriate. Rather, the problem is diagnosed as Sexual Dysfunction Due to a General Medical Condition and/or Substance-Induced Sexual Dysfunction.

In addition to these subtypes there are different patterns of erectile dysfunction. Some individuals experience difficulty attaining an erection while others have a problem maintaining an erection. Diagnosis can also be complicated by the fact that problems change over time. For example, the problem may begin as difficulty maintaining an erection but later obtaining an erection also becomes a problem. Some individuals will report the inability to obtain any erection from the outset of a sexual experience. Others will complain of first experiencing an adequate erection and then losing tumescence when attempting penetration. Masturbatory erections may be lost as well, but this is not common (APA, 1994). Still others will report that they have an erection that is sufficiently firm for penetration but that they then lose tumescence before or during thrusting.

It is crucial to note that before a diagnosis of Male Erectile Disorder can be made, a number of medical factors must be assessed and ruled out.

Prevalence

Unfortunately, studies examining the prevalence of Male Erectile Disorder generally rely on response to a single question on "potency." And often such studies do not address etiological factors in order to distinguish between psychogenic vs. medical factors or combined. However, it is estimated that at least 10 to 20 million American men suffer from erectile dysfunction (Masters, Johnson, & Kolodny, 1994). But erectile difficulties seem to be ubiquitous. For some men, they represent a transitory problem, whereas others will experience erectile difficulties that are more persistent and troublesome. In either case, it has been estimated that as many as 50% of all men will experience erectile difficulties at some point in their lives (Masters, Johnson, & Kolodny, 1994).

Estimates of the prevalence of Male Erectile Disorder can be culled from three general sources: sex clinics, primary care physicians and urologists, and epidemiological studies. The first source of information comes to us from sex clinics. A review of this literature over the past 2 decades (i.e., Spector & Carey, 1990) indicated that erectile dysfunction may be the most common complaint for males who present to sex therapy clinics. Frank and colleagues (1976) and Bancroft and Coles (1976) found that 36% and 40%, respectively, of males presenting for sex therapy had erectile dysfunction as their primary complaint. Similarly, Hawton (1982) found the rate of dysfunction among men increased to 53%. Masters and Johnson (1970) reported that 50% of men requesting treatment at their Institute in St. Louis experienced secondary (i.e., acquired) erectile dysfunction, and 8% experienced primary (i.e., lifelong) erectile dysfunction. Renshaw (1988) found a similar discrepancy at her clinic in Chicago between primary and secondary

erectile dysfunction, with primary dysfunction measured at 3.5% and secondary dysfunction measured at 48%.

The figures cited above are from psychosocially oriented sex therapy clinics. An even larger number of men may initially present to the second source for prevalence estimates, primary care physicians and urologists. In a study by Schein et al. (1988), it was reported that 27% of 64 male patients presenting to a family practice clinic complained of erection problems.

The third source of information for prevalence estimates comes from large epidemiological studies. A recent comprehensive community-based study, the Massachusetts Male Aging Study (Feldman et al., 1994), asked men between the ages of 40 to 70 years to categorize their erectile function as totally, moderately, minimally, or not "impotent." Fifty-two percent of the sample reported some current erectile dysfunction. In addition, this study demonstrated that erectile dysfunction is an age-dependent disorder. Between ages 40 to 70 years the probability of "complete impotence" tripled from 5.1 to 15%, the probability of "moderate impotence" doubled from 17 to 34%, while the probability of "minimal impotence" remained constant at 17%. By age 70, only 32% portrayed themselves as free of erectile dysfunction.

Laumann, Paik, and Rosen (1999) reported the first population-based assessment of sexual dysfunction in the half-century since Kinsey et al. (1953). The investigators analyzed data from the National Health and Social Life Survey, a probability sample study of sexual behavior in a demographically representative, 1992 cohort of 1,410 U.S. men aged 18 to 59 years. The study found an overall prevalence rate of 5% for erectile dysfunction, as defined by the DSM-IV (APA, 1994). Similar to the Massachusetts Male Aging Study (Feldman et al., 1994), the oldest cohort of men (ages 50 – 59 years) was more than 3 times as likely to experience erection problems in

comparison to men aged 18 to 29 years. Besides age, other risk factors included: 1) marital status (non-married men reported significantly higher rates of erectile dysfunction than married men), 2) education (male college graduates were half as likely to report non-pleasurable sex and sexual anxiety than men who did not have high school diplomas), 3) physical health (men with poor health had elevated risk for erectile dysfunction), 4) social economic status (deterioration in economic position, indexed by falling household income, was generally associated with a modest increase in risk for erectile dysfunction), 5) childhood victimization (male victims of adult-child contact were 3 times as likely to experience erectile dysfunction than those who had not been victims of adult-child contact), and 6) perpetration (men who had sexually assaulted women were 3 ½ times as likely to report erectile dysfunction).

The commonness of this problem is also suggested by several indirect indicators; for example, (1) the number of self-help organizations for men with erectile problems (e.g., Impotents Anonymous, Maryville, TN; Recovery of Male Impotence, Southfield, MI); (2) the numerous advertisements that appear in the so-called "men's magazines" offering magical "cures" of one type or another; and (3) an active and flourishing commercial interest in medical treatments (Wincze & Carey, 1991).

The next section addresses the theories and causes of erectile dysfunction.

Part II: Theories of Etiology of Erectile Dysfunction

The prevalence and impact of erectile dysfunction have prompted researchers to evaluate the etiology of the problem. These efforts have been guided by four major approaches: Sociocultural, psychological, biological, and biopsychosocial. Although there are several commonalities among these approaches, there is often a lack of appreciation among proponents of one viewpoint for those of the others. In general, differences are largely due to the perspective

(sociocultural, biological, or psychological) used to describe the problem. Because the biopsychosocial perspective integrates information from the other three areas, this orientation appears to offer the greatest promise for future research and treatment. The impact theory has on both research and practice necessitates a brief review of the most prominent theories of erectile dysfunction.

Psychosocial Factors

Sociocultural Factors

Culture sets the expectations for sexual functioning. Society defines what is considered "normal" sexual performance. Thus social and cultural factors seem to affect later sexual functioning. John Gagnon has studied this phenomenon and constructed an important theory of sexual functioning called "script theory" of sexual functioning. According to this theory, we all operate according to scripts that reflect social and cultural expectations and guide our behavior (Gagnon, 1990). Discovering these scripts, both in individuals and across cultures, will tell us much about sexual functioning. For example, if one learns that sexuality is potentially dangerous, dirty, or forbidden, he or she will be more vulnerable to developing sexual dysfunction later on in life. This pattern is most evident in the studies of cultures with very restrictive attitudes toward sex. For example, vaginismus is relatively rare in North America but is the most common cause of unconsummated marriages in Ireland (O'Sullivan, 1979; Barnes, 1981). Even in our own culture certain socially communicated expectations and attitudes may stay with us despite our relatively enlightened and permissive attitude toward sex. Zilbergeld (1992) has elaborated a number of myths about sex held by many males, and Heiman and LoPiccolo (1988) have done the same for females. Zilbergeld's myths are listed in Table 4. Baker and DeSilva (1988) converted an earlier version of Zilbergeld's male myths into a questionnaire and presented it to

groups of sexually functional and dysfunctional men. They found that men with dysfunctions showed significantly greater belief in the myths than did men who were functioning sexually.

While we do not know for sure why some people develop erectile dysfunction, many individuals may have learned early that sexuality can be negative and somewhat threatening, and they develop sexual responses to reflect this belief. Byrne and his colleagues (Byrne & Schulte, 1990) call this cognitive set or disposition "erotophobia." They have demonstrated that erotophobia, presumably learned early in childhood from families, religious authorities, or others, seems to predict sexual difficulties later in life (Byrne & Schulte, 1990). Thus, for some individuals, sexual cues become associated early with negative affect. In other cases, both males and females may experience specific negative or traumatic events after a period of relatively well-adjusted sexuality. These negative events might include sudden failure to become aroused one night or actual sexual trauma such as rape. These stressful or negative events may initiate negative affect, in which individuals experience a loss of control over their sexual response cycle, throwing them into a kind of dysfunctional pattern (Barlow & Durand, 1995).

In addition to generally negative attitudes or experiences associated with sexual interactions, a number of other factors may contribute to sexual dysfunction. Among these, the most common is a marked deterioration in close interpersonal relationships (Barlow & Durand, 1995). It is difficult to have a satisfactory relationship in the context of growing dislike for one's partner. This applies to both males and females. Kelly, Strassberg, and Kircher (1990) compared 24 orgasmic and 10 anorgasmic women on a variety of variables. The anorgasmic women, in addition to displaying more negative attitudes toward masturbation, greater sex guilt, and greater endorsement of sex myths, specifically reported discomfort in communicating with their partner about sexual activities that might increase their arousal or lead to orgasm, such as direct clitoral

stimulation. Poor sexual skills might also lead to frequent sexual failure and, ultimately, lack of desire.

Psychological Factors

During the second half of this century anxiety has been heralded as the cause of impaired sexual arousal. This represented improvement over the Victorian conceptualization of sexual dysfunction as the result of "moral degeneracy" or over the Freudian view of sexual dysfunction as the representation of arrested psychosexual development (LoPiccolo, 1992). Early behaviorists posited that anxiety was the major cause of sexual dysfunction because anxiety reciprocally inhibited sexual arousal (e.g., Wolpe, 1958). Concurrent with the development of behavioral therapies, treatment for sexual disorders became directive and focused on anxiety reduction. Wolpe (1958) recommended the use of systematic desensitization in the treatment of sexual dysfunctions with the premise that anxiety inhibits sexual arousal and therefore the elimination of anxiety is the treatment goal. Masters and Johnson (1970) revolutionized the field of sex therapy with the publication of *Human Sexual Inadequacy.* They too posited a central role for anxiety in the development and maintenance of sexual dysfunction, asserting performance anxiety and fear lay as the etiological basis. They further elucidated sexual anxiety by describing the process of "spectatoring," whereby individuals detach themselves from the sexual experience as though they were outside observers. And importantly, they presented sex as a skill to be learned. Kaplan (1977) similarly described anxiety as the root of sexual dysfunctions and extended the umbrella of anxious domains to include partner-demand characteristics

Treatments based on these conceptualizations have focused, not surprisingly, on reducing anxiety in a sexual context. Masters and Johnson's method involves "sensate" focus and an "intercourse ban" to avoid further anxiety-laden attempts at intercourse. During this process

arousal is expected to occur through non-genital body massage. When erections occur spontaneously, the couple advances progressively to intercourse; thus, this technique resembles techniques of *in vivo* systematic desensitization. Psychological treatments have changed some over the past decade. Along with the development of cognitive-behavioral approaches, there has been an increasing focus on cognitions as etiological and maintaining factors in sexual dysfunction as well as more general issues (LoPiccolo, 1992; Pryde, 1989). Unfortunately, there continues to be a paucity of treatment-outcome research on these innovations as well as basic psychopathology research on the nature of sexual dysfunction.

It should be pointed out that most research has been done with men and many models of sexual dysfunction assume equal application to males and females. Clearly, more research is needed to study differences among men and women in the etiology and treatment of sexual dysfunction. Most of what will be reviewed in this paper pertains to males – an unfortunate reflection of the current state of the literature. However, an important line of research by Palace (1990, 1992, 1995a, 1995b), although focusing on female sexual dysfunction, appears to have significant application to the study of male sexuality as well.

This section reviews the modern development of psychological theories of erectile dysfunction, from Masters and Johnson's conceptualization of "performance anxiety," to Barlow's (1986, 1988) and Sbrocco and Barlow's (1996) models which emphasize the interactive role of cognitive interference and autonomic arousal, and ending with Palace's (1995b) cognitive-physiological process model of female sexual arousal and response. These theories pertain to erectile dysfunction of predominantly psychological origin. A comprehensive medical assessment is, with few exceptions, a prerequisite for addressing erectile dysfunction of psychological origin. The physiological and medical factors requiring assessment are reviewed

after psychosocial theories, along with a brief overview of medical assessment and treatment techniques.

Masters and Johnson's Model of the Sexual Response Cycle

Treatment approaches to sexual dysfunction have undergone considerable change over the past century. During the first half of the century psychoanalytic theory dominated the field of psychology, and therefore, opinions concerning the nature of sexual disorders. Much as it viewed the full spectrum of psychological problems, psychoanalytic approaches considered sexual dysfunctions as mere indications of a more serious underlying problem, symptoms of deep-seated psychological disturbance of personality originating in early childhood experience. Treatment necessarily involved lengthy and often cost-prohibitive analysis, and success rates were not encouraging (Hawton, 1985).

In the late 1950s and early 1960s, with the advent of behavioral therapies, approaches to the treatment of sexual disorders become more directive. Wolpe (1958) suggested the use of systematic desensitization in the treatment of sexual dysfunctions; with the elimination of anxiety, a response configuration believed antagonistic to sexual arousal, as the goal of treatment. With systematic desensitization, limited success was reported in the treatment of sexual disorders including vaginismus (Haslam, 1965), and erectile dysfunction (Friedman, 1968).

Masters and Johnson (1966) proposed a four-phase descriptive model of the responses that occur in humans during sexual behavior. The model is described in terms of four sequential stages or phases. The phases, in order, are (1) the excitement phase, (2) the plateau phase, (3) the orgasmic phase, and (4) the resolution phase. Masters and Johnson (1966) have described the genital and extragenital responses that they reported as being typically associated with each phase. These responses provide cues as to psychophysiological measures that might provide

helpful indices of sexual arousal throughout the cycle. Masters and Johnson's description of sexual responses emphasize two generalized responses to sexual stimulation: vasocongestion and myotonia. Up to this time the former has proven more useful in research.

To return to the model, the first phase (excitement) describes the initial response to "effective" sexual stimulation. During the excitement phase there is a continuous increase in the level or intensity of arousal. If effective stimulation is continued, the individual will enter the plateau phase. This phase, which consists of high-level arousal of relatively consistent intensity, will, with continued stimulation, ultimately result in orgasm. However, cessation of stimulation during the plateau or excitement phases results in eventual return to pre-stimulation levels. The orgasmic phase, which signals the end of the plateau phase, is of brief duration and represents the involuntary reaching of maximal sexual tension. Males report that a period of ejaculatory inevitability develops at the beginning of the orgasmic phase. The resolution phase, which follows the orgasmic phase, is characterized by a loss of tension, which leads to an eventual return to pre-stimulation levels. Masters and Johnson note that there are substantial individual differences in sexual response cycles. Their model is presented here as a heuristic and not as an absolute. In particular, the evidence of a clearly identifiable plateau phase is questionable.

The publication of *Human Sexual Inadequacy* was an event of considerable significance in the development of sexual dysfunction theory and treatment for two main reasons:

1. Masters and Johnson offered an intensive short-term treatment method which could be undertaken in two weeks with what they claimed were impressive results.
2. The treatment had no specific theoretical base, but it was derived instead from extensive research into sexual responses which hitherto had not been either documented or as fully understood.

Although few investigators would dispute the importance of the Masters and Johnson model, it has been subjected to serious criticism. Among these criticisms are included the fact that they failed to describe adequately the methods they used to collect their psychophysiological data, making it impossible to replicate their studies. In addition, the data reported were unquantified, and there have been conflicting findings concerning the presence of increased vasocongestion in female genitals during orgasm (Geer & Quartararo, 1976). Finally, questions have been raised concerning the universality of the model (Rosen & Rosen, 1981). Replications using standardized physiological measures and eliciting conditions are needed to resolve these discrepancies in the literature.

Masters and Johnson Sex Therapy

The pioneering research of Masters and Johnson (1966, 1970) in the area of human sexual response has encouraged the development of a number of brief couple therapy programs for the treatment of erectile dysfunction. Although there are significant differences between the various couple programs in both rationale and treatment format, these programs have in common a primary treatment goal of altering the dysfunctional sexual behavior without an emphasis on extensive underlying personality change. Furthermore, these programs usually treat couples (when possible) rather than individuals, since the treatment focus is on changing the attitudes, communications, and sexual behaviors within a sexual relationship. The treatment format of the couple therapies includes sexual exercises carried out by the couple between counseling sessions. These exercises are regarded as at least as important as the counseling sessions in facilitating change in the sexual dysfunction.

The most well-known example of couple sex therapy is the pioneering program of Masters and Johnson (1970) at the Reproductive Research Foundation in St. Louis. Masters and

Johnson isolated several factors that they regarded as having etiological significance for erectile dysfunction in their treated couples. The etiological factors for "primary erectile dysfunction" (i.e., lifelong) included, in descending order of frequency, varied pathogenesis, religious orthodoxy regarding sexual expression, a homosexual orientation based on early meaningful homosexual relationships, trauma associated with an initial coital attempt with a prostitute, overt sexual encounters between mothers and sons, and alcoholism. The suspected etiological factors for "secondary erectile dysfunction" (i.e., acquired) included, again in descending frequency, secondary reactions to premature ejaculation, alcoholism or an acute alcoholic episode, religious orthodoxy, homosexual influence, maternal dominance, undiagnosed diabetes, diagnosed diabetes, psychophysiological dysfunction, iatrogenic influence, paternal dominance, and single-parent families. Although these proposed etiological experiences may have been transparent in the retrospective histories of the treated patients, conclusive statements regarding the general validity of these factors as necessary or sufficient causes of erectile dysfunction are unwarranted. Etiological statements are particularly troublesome, since little is known about the obviously significant percentage of men who have experienced these conditions without developing erectile problems.

In contrast with Masters and Johnson's (1970) interest in original etiological factors, their treatment program focuses on the more immediate causes within the couple's present sexual interactions. Prominent among these immediate factors are the man's "fear of performance;" the resultant "spectator's role;" and his partner's concerns about her own sexual adequacy, satisfaction, and marital relationship. Whatever the original source of the erectile dysfunction, Masters and Johnson contended that the problem is usually maintained by the man's preoccupation with actively achieving or "willing an erection," which itself results from a fear of

continued erectile difficulty. Such preoccupation essentially makes the man a "spectator" to his own sensual experience, rather than a participant, thereby blocking his access to the physical and psychological stimulation that would normally produce heightened sexual arousal and "spontaneous" erection. This interference with sensual experience is frequently exacerbated by negative reactions by his sexual partner. For instance, due to her own ignorance, antagonism, or discomfort with sexual expression, a partner might fail to provide adequate stimulation for male arousal, either by not providing overt physical stimulation or by being non-expressive in her reactions to his stimulation. The detumescence that results from the combination of the inhibitory influences of both partners creates even greater performance concerns, which produces a vicious cycle of distress and flaccidity.

The Masters and Johnson (1970) treatment format consists of educational presentations, therapy discussions, and couple exercises. Their didactic presentations and the monitoring of the private couple exercises occur during daily meetings between the couple and a dual-sex therapy team over a 2-week treatment period. These procedures are designed to alleviate sexual performance concerns, dispel sexual misconceptions, and promote new forms of verbal and nonverbal communication. The underlying rationale is the strongly stated belief that a redirection of the male's attention from sexual performance to sensual reception combined with increased communication of preferences and reactions by both partners will result in an erectile response that is an involuntary, reflexive response to erotic stimulation.

Kolodny (1981) reported statistics from the Masters and Johnson Institute for the years 1959 – 1977. The success rate among 51 men with "primary impotence" (e.g., lifelong erectile dysfunction) was 67% and the success rate among 501 men with "secondary impotence" (e.g., acquired erectile dysfunction) was 78%. Success was defined as the ability to penetrate the man's

partner on at least 75% of coital attempts. Results included 5 year or 2 year follow-ups. Subsequent treatment outcome studies by others report success rates between 35 and 90 percent (Ansari, 1976; Kolodny, 1981; Takefman & Brender, 1984; Hawton, Catalan, and Fagg, 1992; and Avasthi, Basu, Kulhara, & Banerjee, 1994).

It should be noted that researchers have reported that between 14 and 30 percent of all men who experience erectile disorder will spontaneously remit without any form of therapeutic intervention (Segraves et al., 1982, 1985; Virag et al., 1994).

Few would argue that Masters and Johnson's *Human Sexual Inadequacy* (1970) revolutionized sex therapy. Prior to their work, the field had been characterized by a plethora of treatment approaches based on a variety of theoretical orientations (primarily psychoanalytic). Although their seminal volume was based largely on clinical observation, not on controlled experimentation, this controversial work provided the impetus for the empirical investigations of many of Masters and Johnson's core concepts (e.g., performance demand, spectatoring).

Historically, there has been an almost universal belief that anxiety is involved in the etiology and maintenance of sexual dysfunction. Researchers and clinicians alike have subscribed to the notion that the physiological correlates of anxiety effectively inhibit sexual arousal. Although they have resulted in the development of the most commonly employed approaches to sex therapy, beliefs about the inhibitory effect of anxiety on sexual arousal have been grounded in clinical observation with a lack of substantiating research evidence. In fact, the preponderance of research in the field to date has focused on treatment outcome rather than on the more basic investigation of the means through which sexual anxiety may interfere with sexual responsivity.

However, the results of studies over the past 2 decades suggest that the role of anxiety in sexual dysfunction needs to be reconceptualized. It appears that it is not anxiety per se that is responsible for initiating or maintaining sexual difficulties in most cases; rather it is the alterations in perceptual and attentional processes that occur in sexually dysfunctional male patients (Cranston-Cuebas & Barlow, 1990).

Barlow's Cognitive-Physiological Process Models of Male Sexual Arousal and Response

Persistence in the belief that anxiety inhibits sexual arousal continues, despite research during the past decade suggesting anxiety does not necessarily inhibit it (Sbrocco & Barlow, 1996). In fact, the effect of anxiety on sexual arousal depends largely on how anxiety is defined. That is, anxiety is a three-response system with cognitive, affective, and physiological component that can all be assessed and manipulated (Barlow, 1988). Barlow's (1986, 1988) model of sexual dysfunction posits cognitive interference, fueled by the physiological arousal associated with anxiety, as responsible for sexual dysfunction (see Figure 2).

The nature of this cognitive interference in sexually dysfunctional individuals seems to revolve largely around focusing on or attending to a "task-irrelevant" context. More specifically, Barlow (1986, 1988) hypothesized that dysfunctionals are not focusing on erotic cues. Rather, dysfunctionals focus on non-erotic material, possibly performance-related or non-sex related thoughts. This non-erotic focus of attention then becomes heightened by the physiological aspects of arousal. That is, arousal functions to narrow attention on task-irrelevant information resulting in further deterioration in sexual performance. Paralleling this process, sexually functionals' focus on erotic cues is enhanced by attentional narrowing, up to a point. Therefore, arousal generally facilitates performance in functional subjects.

This conceptualization is based on the observation of five fundamental differences in responding between sexually functional and dysfunctional subjects. These differences were manifested over a series of studies examining the interplay of anxiety and sexual arousal that resulted in the following observations: (1) Experimental induction of anxiety often facilitates sexual responding in individuals who are not already experiencing sexual difficulties. And, heightened arousal, up to a point, magnifies typical response patterns such that functional men experience increased arousal and dysfunctional men experience decreased arousal; (2) subjective report of arousal is accurate or overreported among functionals and underreported among dysfunctionals; (3) distraction from erotic cues decreases arousal in functionals and either has no effect or slightly enhances arousal among dysfunctionals; (4) performance demand facilitates responding among functional men and inhibits responding in dysfunctional men; and (5) dysfunctionals evidence greater negative affect pre- and post-exposure to erotica. Thus, it appears, based on these results, that affective states and specific cognitive processes have consistent effects on sexual response. Yet it is currently unclear whether these basic differences are the cause of dysfunction or the consequence of dysfunction. Let us first review research supporting the sequence of the dysfunction. We first review research supporting the identification of these differentiating findings and then apply Carver and Scheier's (1986, 1988) behavioral self-regulatory theory to tackle the questions of etiology and maintenance of dysfunction in a refined model of sexual dysfunction (see Sbrocco & Barlow, 1996).

Anxiety Facilitates Arousal

Several early reports ran contrary to the notion pinpointing anxiety as the causal mechanism in sexual dysfunction (e.g., Bancroft, 1970; Ramsey, 1943; Sarrel & Masters, 1982). These reports included non-sexual stimuli associated with erectile response and sexual

performance under threat of physical harm. In addition, the very nature of paraphilias runs contrary to the premise that anxiety inhibits sexual arousal, as sexual arousal among some paraphilics—such as exhibitionists—is often associated with the threat of being caught (Beck & Barlow, 1984). In one of the first studies examining anxiety and sexual arousal in the laboratory, Hoon, Wincze, and Hoon (1977) examined sexual arousal in response to erotica pre- and post-exposure to either a neutral or noxious (automobile accident) film clip. First, sexually functional women viewed a 2-minute film sequence. Immediately following, subjects viewed an erotic film. Sexual arousal, assessed with vaginal plethysmography, was significantly greater in those women who had been pre-exposed to the anxiety-producing noxious film as opposed to the neutral film. Interestingly, when the order of the film types was reversed such that subjects viewed the erotic films first, sexual arousal was lower following the anxiety producing segment. These results were replicated with males (Wolchik et al., 1980).

At the time of the original Hoon et al. (1977) study, these results were taken as evidence against Wolpe's (1958) contention that anxiety and sexual arousal are mutually inhibitory. However, Wolpe (1978) contended that the anxiety exposure paradigm was an insufficient test of the reciprocal inhibition theory due to the paradigm's reliance on the carryover effects of the noxious exposure. In response to this contention, a subsequent series of studies by different investigators attempted to simultaneously induce anxiety and sexual arousal. Lange, Wincze, Qwiek, Feldman, and Hughes (1981), operationalizing anxiety as sympathetic arousal, simultaneously induced anxiety and sexual arousal using injections of epinephrine hydrochloride. In a single-blind study, subjects received either saline or epinephrine injections before viewing erotic films. No differences in sexual responding between the placebo and epinephrine groups

were noted thus providing further support for the notion that sympathetic activation does not necessarily inhibit sexual arousal in the presence of erotica.

A series of studies in Barlow's lab support these findings. Barlow, Sakheim, and Beck (1983) employed a repeated measures design using two shock threat conditions and a no-shock condition with functional males. In this paradigm, shock threat is utilized to induce anxiety. Subjects in the contingent shock threat condition were told there was a 60% chance they would receive a shock if they did not achieve the average level of erection achieved by previous subjects. In the noncontingent threat, subjects were told that the chance they would receive a shock remained 60%; however, this chance of shock was unrelated to their level of erection or any other response. The results indicated that noncontingent shock threat increased sexual arousal compared with the no-shock condition, a finding that confirmed the results of earlier investigations. However, even the demand condition (contingent shock threat) increased sexual responding and, in fact, this condition produced the highest overall level of tumescence (See Figure 3).

These results were partially replicated with the addition of dysfunctional males by J.G. Beck, Barlow, Sakheim, and Abrahamson (1987). Functionals evidenced greater tumescence in the noncontingent shock condition. However, arousal in the contingent shock condition was not elevated over control arousal. Unfortunately, with only eight subjects per group, this study may not have had enough power to adequately evaluate these differences were they to exist. Dysfunctionals, on the other hand, evidenced significantly less tumescence in both shock conditions compared to the control condition.

It becomes obvious, in examining the methods used to operationalize the construct anxiety, that a concise definition of anxiety is imperative (J.G. Beck & Barlow, 1984). The

results discussed thus far suggest that the physiological component of anxiety is associated with no decrement or an increase in sexual arousal for functionals and a decrement in responding for dysfunctionals.

Control of Performance and Performance Demand

Performance demand manipulations in experiments on sexual arousal are similar to instructions to enhance erectile response in experiments on voluntary control of sexual arousal (Cranston-Cuebas & Barlow, 1990). An examination of capacity to voluntarily control erectile response suggests functionals can voluntarily increase their erectile responding to erotic or fantasy when given instructions to do so (Bancroft & Mathews, 1971; Laws & Rubin, 1969). Others (e.g., Henson & Rubin, 1971; Mavissakalian, Blanchard, Abel, & Barlow, 1975) have also demonstrated voluntary inhibition of erectile responding. Mahoney and Strassberg (1991) address functional males' ability to control their arousal in experiments evaluating subjects' ability to fake preferences for arousing stimuli. Their results provide support for functional subjects' ability to control their arousal and, importantly, note that this response depends on attendance to experimental stimuli. Dysfunctionals, too, appear able to suppress their erections in the presence of erotica (J.G. Beck, Barlow, & Sakheim, 1982). While functionals readily reported cognitive strategies they had employed, dysfunctionals evidenced little awareness that they had been successful nor could they report the strategies they had used. Similarly, dysfunctionals often underreport level of erection (Abrahamson, Barlow, Sakheim, Beck, & Athanasiu, 1985b; Bruce, Cerny, & Barlow, 1986; Sakheim, 1984) and subjective arousal (Sakheim, Barlow, Abrahamson, & Beck, 1987; Morokoff & Heiman, 1980).

Operationalization of the concept of performance demand is also important. This term refers to the cognitive aspects of anxiety under conditions in which individuals believe they are

challenged to achieve some standard. Various methodologies are used to operationalize this concept, both directly and indirectly. For example, the contingent shock threat described earlier represents a direct manipulation of performance demand, while observation of one's own genital feedback (Sakheim et al., 1984) discussed subsequently represents a less direct manipulation. Several studies have attempted to manipulate performance demand. In two early studies (Farkas, Sine, & Evans, 1979; Lang et al., 1981) with functional males no differences were found between high-demand and low- or no-demand instruction sets. Dysfunctional men, however, demonstrated a different pattern when given high-demand versus low-demand instructions (Heiman & Rowland, 1983). That is, dysfunctionals evidenced lower levels of tumescence during the high- relative to the low-demand condition.

In an attempt to extend these findings by manipulating attentional focus in addition to performance demand, J.G. Beck, Barlow, and Sakheim (1983) examined the interactive effects of self-focused versus partner-focused attention across three levels of partner arousal (high, low, and ambiguous). Under conditions of high partner arousal, functional males evidenced greater responding under partner-focused compared to self-focused instruction sets. Conversely, dysfunctional males displayed lower levels of tumescence in the high partner arousal condition with partner-focused versus self-focused instructions. Abrahamson, Barlow, Beck, Sakheim, and Kelly (1985) replicated these findings. Results from J.G. Beck et al. (1983) and a replication by Abrahamson, Barlow, Beck et al. (1985) point out that functionals and dysfunctionals reacted differently to pressure to respond sexually when attending to high partner arousal. In addition, functionals reported this experience as arousing whereas dysfunctionals found it non-arousing. Although thought content is not directly addressed in these studies, results of a recent study examining thought listing in response to erotica (Bach, Sbrocco, Weisberg, Weiner, & Barlow,

1993) suggest dysfunctionals experience more negative internal thoughts in response to erotica. It is not difficult to understand why dysfunctionals would not be aroused concurrently with negative, deprecatory self-statements during sexual performance demand conditions.

Sakheim, Barlow, Beck, and Abrahamson (1984) provide additional support to the notion that directed focus and performance demand interact. Functional males viewed three levels of erotic film clips while their genitals were either covered or uncovered. Uncovered genitals in the slightly arousing film decreased erectile responding, but facilitated tumescence during the highly arousing stimulus. The authors suggest attentional focus on aroused genitals provides additional erotic cues, whereas focus on limited genital response may induce performance concerns.

Based on differential responding between functionals and dysfunctionals in response to performance demands, it has been concluded that concerns labeled variously as "performance demand," "fear of inadequacy," "spectatoring," and the like are all forms of situation-specific, task-irrelevant, cognitive activities that prevent dysfunctionals from task-relevant processing of stimuli in the sexual context. Similarly, this process represents dysfunctionals' disengagement from an erotic focus. We turn now to studies directly manipulating distraction in the context of erotica.

Distraction and Sexual Arousal

Geer and Fuhr (1976) were one of the first groups to conduct an empirical examination of the effects of distraction on sexual arousal using a dichotic listening paradigm. As subjects increased their attention to the distracting task, their remaining attention available to focus on the erotic passage diminished and corresponding decrements in sexual arousal occurred. These findings have been replicated using a different stimulus modality (Farkas et al., 1979). Thus these studies suggest that the competing cognitive tasks result in significant decrements in

physiological sexual arousal. Abrahamson, Barlow, Sakheim, et al. (1985) reported findings that indicated distraction might differentially affect the sexual arousal of functional and dysfunctional males. Replicating earlier findings of decrements in tumescence for functionals, the authors did not find a corresponding effect for dysfunctionals. These results are presented in Figure 4. In fact, dysfunctionals showed a nonsignificant increase in tumescence. The authors speculated that whereas functionals were diverted from erotic cues by the distraction, dysfunctional subjects' attention may have already been focused on non-erotic thoughts (e.g., performance concerns). Thus, the distracting task shifted dysfunctionals' attention away from one distractor onto another resulting in no appreciable change in tumescence.

J.G. Beck et al. (1987) evaluated the interaction of autonomic arousal and cognitive interference. They presented functional males with four noncontingent shock conditions and used a sentence recognition task afterwards to examine attentional focus. As shown in Figure 5, the results revealed that shock threat decreased erectile responding under the half tolerance and tolerance condition. Yet levels of tumescence returned to normal under the twice tolerance threat to a level near the no-shock condition. Conversely, attention on the sentence completion task mirrored this response. That is, the better subjects did on the sentence recognition task, the lower their sexual arousal.

In a study designed to examine the effect of anxiety without a distractor, Jones, Bruce, and Barlow (1986) used this paradigm with functionals and dysfunctionals minus the sentence completion task. Sexually functional males evidenced increasing levels of arousal as intensity of shock threat increased up to full tolerance level where it asymptotes (See Figure 6). Actually, functionals evidenced greatest arousal at half tolerance while arousal in the other conditions seemed similar (no shock, full tolerance, and twice tolerance) thus suggesting anxiety is

facilitatory only at certain levels. Dysfunctionals, on the other hand, evidenced lowest responding in the half tolerance condition compared to the other conditions. It is interesting that when the functionals are at their best, the dysfunctionals are at their worst.

Abrahamson, Barlow, and Abrahamson (1989) reported similar differential response to different types of distractors. Subjects were distracted by a neutral (non-sexual) distractor and a performance sexual distractor while watching erotica. Under the neutral distraction condition, subjects judged the width and length of a line in comparison to a standard line viewed earlier. For the sexual distractor subjects viewed live genital feedback from a video camera focused on their genitals. During this feedback, performance demand was manipulated by having subjects estimate their level of erection and whether their tumescence was sufficient for intercourse. Functional males showed significantly greater levels of tumescence under the genital feedback relative to neutral distraction and a control condition. However, dysfunctional males evidenced significantly lower levels of tumescence with the sexual distractor. Viewing the sexual distractor also as a performance demand complicates the interpretation of this study. Initially, dysfunctionals may have performed more poorly because they had negative expectancies regarding their ability to achieve an erection or because they did not process these cues and effectively withdrew from the situation (or both). However, this study is somewhat confounded because dysfunctionals were viewing less erotic cues. That is, functional individuals not only experienced greater tumescence, they viewed greater tumescence compared to their dysfunctional counterparts. Simply put, the dysfunctionals' erotic cues were less arousing. Still, this study suggests neutral distraction interferes with functionals and dysfunctionals in a similar manner.

In examining distraction, the etiology of this phenomenon is of most importance. Until recently it was not clear whether distraction duplicates dysfunctionals' "natural" distracting

process or whether dysfunctionals' natural detracting process continued and therefore was not affected by the task. Examining task performance in a recent study suggests that when subjects perform equally well or attend equally (as measured by reaction time and correct response) to a distracting task, tumescence does not differ between functional and dysfunctional groups (Weisberg, Weiner, et al., 1994). And, tumescence is less than what would be expected for functional performance. Thus, suggesting when subjects attended equally to a distracting task, functional performance matched dysfunctional performance and functional performance suffered. Sbrocco and Barlow (1996) suggest that to examine attention less obtrusively, future studies should examine memory for film and task events to further explain attentional processes and differences in functional and dysfunctional subjects. It is hypothesized that without a distraction manipulation, memory erotica would be greater for functionals compared to dysfunctionals. Furthermore, tapping the domain for which dysfunctional memory is expected to be greater than functional memory will provide clues about where functionals' attentional focus lies.

Constructs labeled variously as performance demand, fear of inadequacy, spectatoring, and so forth are all forms of situation-specific, task-irrelevant, cognitive activities that "distract" dysfunctional individuals from task-relevant processing of stimuli in the sexual context. However, while these activities seem to be associated with dysfunctional performance, it may be more helpful to examine why dysfunctionals are not focusing on erotica.

Affect and Sexual Arousal

Thus far, few studies have examined the impact of affect (other than "anxiety") on sexual responding. In addition to Wolchik's study (Wolchik et al., 1980) described earlier, only two studies have examined the impact of affect manipulations on sexual arousal. Mitchell et al. (1992) provided dysfunctional males with a positive versus negative affect manipulation

operationalized as music. Subjects evidenced greater tumescence in the positive versus negative or neutral affect condition. Meisler and Carey (1991) used elation and depression mood inductions to pre-expose subjects before an erotic film. They report a trend toward decreased subjective responding initially and longer time until maximum arousal following depressive mood induction. However, no differences in tumescence were noted. Interestingly, tumescence during erotica was predictive of post-erotica affect, independent of pre-erotica affect. Thus individuals' affective state was in accord with current physiological responding (or another aspect of this experience). More commonly, other investigations have included affective self-report measures in a variety of laboratory paradigms as dependent variables. Both pre- and post-exposure to erotica there is evidence for higher dysphoria among dysfunctionals (e.g., Abrahamson, Barlow, Sakheim, et al., 1985; Abrahamson et al., 1989; Beck & Barlow, 1986a, 1986b; Heiman & Rowland, 1983).

In summary, the results of several studies provide support for five areas in which the responding of sexually functional and dysfunctional males differs. Descriptively, these factors are related meaningfully in a model of sexual dysfunction (Barlow, 1986, 1988) shown in Figure 2. A key feature of this model is the proposition that it is actually cognitive interference, a distraction process, that is the mechanism of action through which many experiences act to inhibit sexual responsivity. This process, when combined with increased autonomic arousal, leads to the inhibition of sexual arousal through a facilitated distraction effect. Thus, it is not autonomic arousal alone that inhibits arousal. As such, this model shares several similarities with current models of social and other evaluative anxieties that emphasize the role of cognitive interference in the dysfunctional performance. We turn now to such a model, a model of self-regulation, to understand how and why these differences may exist.

Cognitive Regulation of Sexual Arousal

Understanding the process with the aid of self-regulatory theory provides increased specificity regarding constructs and mechanisms of action hypothesized in Barlow's (1986, 1988) model of sexual dysfunction. Further, this refinement may facilitate the conceptualization of etiology and developmental psychopathology. In the following section we outline this conceptualization focusing on four key areas: schematic vulnerability, skill deficit, outcome expectancies, and disengagement. A schematic depiction of the framework adapted from Carver and Scheier (1988) can be found in Figure 7.

A presupposition of this model of sexual functioning is that sexual behavior, like all human behavior, is regulated in a system of feedback control (see Carver & Scheier, 1981, 1986, 1988). The process of behavioral regulation involves people using reference points for ensuing behavior. Reference points consist of personal goals, standards, and intentions that are both short term and long term. These goals and desired outcomes can be conceptualized as schematic content. As people engage in tasks, they self-attend and monitor their actions with regard to their standards (Carver & Scheier, 1988). When necessary, they adjust their behavior to conform to the desired goals and outcomes. This behavioral adjustment is basic to self-regulation and operates through feedback control. Generally, the process of behavioral regulation operates smoothly. During sexual activity, conflict may arise due to contextual or environmental disruptions (e.g., uninterested partner) and competing reference values. For example, a man with difficulty obtaining an erection may experience anxiety because he believes his partner will be angry and disappointed. The rising anxiety functions as a warning signal to induce behavioral adjustment.

We believe most individuals can adjust their behavior (e.g., shift positions to increase stimulation). That is, we are operating under the premise that most individuals experience varying degrees of discrepancy in their desired arousal and experienced arousal. And, most individuals make appropriate adjustments. Yet, several factors may interfere with discrepancy adjustment and therefore have implications for understanding sexual dysfunctions. These factors include schematic content, skill deficit, negative outcome expectancies, and disengagement or avoidance. The first two factors may be considered primary variables while the latter two are secondary factors. Each is explicated below with reference to empiric literature.

Schematic Content

The present discussion on schema is guided by two basic assumptions. First, sexually dysfunctional individuals develop organized cognitive structures (schemas) around issues of sexuality and implications for the self that influence their thoughts, affect, and behavior. Second, the operation of these self-schemas can help account for the persistence of erectile dysfunction in the context of self-regulation. Ample evidence from other areas of psychopathology indicates that biases in information processing are related to the maintenance of depressive and anxiety disorders.

Sexual self-schemas, which include standards, expectations, and self-implications for sexual behavior, are often unrealistic and inaccurate. For example, it is not uncommon for men to believe they can have multiple sequential ejaculations. As well, this belief-set and these standards are exposed to little new information that is correct or realistic. Therefore, there is often little accommodation and assimilation of new accurate information into these schemas. The conceptualization that individuals' beliefs about sex are paramount in directing their behavior is similar to John Gagnon's (Gagnon, 1990; Gagnon, Rosen, & Leiblum, 1982; Gagnon & Simon,

1987) scripting perspective used to explain sexual behavior in its cultural context. This perspective emphasizes that, despite similar physiological functioning, there is often little similarity in the meaning of sexual behavior in different cultures.

The idea that beliefs about sex direct behavior is particularly important in examining the etiology of sexual dysfunctions (Lavender, 1985). Inaccurate or distorted schemas may function as a vulnerability factor for the development of a sexual dysfunction. This includes the self-implications of an inability to regulate. Such implications may increase anxiety and further impair regulation. For example, imagine a man who holds the following belief: "A real man can have an erection whenever and wherever." The consequence of not completing this goal may seem catastrophic. Such a discrepancy in behavior and expectation may be perceived as extremely threatening and by that impair regulation. In addition, this process impairs problem solving because there is little room in the rigid schema for dealing with this difficulty because "it is not supposed to happen."

It is important to note that functional individuals are equally disposed to subscribing to normatively distorted views about their sexual functioning. The terms "impotent" or "rigid" provide anecdotal evidence of the association of sexual difficulties with negative qualities. However, Sbrocco and Barlow (1996) postulate that the meaning of the dysfunction will also be unique for dysfunctionals compared to others. That is, while the more superficial content is almost universally endorsed, the intensity and personal relevance of sex-related schema may distinguish dysfunctionals from their peers. An important reminder is to examine both the cultural- and cohort-specificity of such schemas. For example, we may know something about older adults' views of sex in the 1970s yet there is a good possibility older adults in the 1990s will have different viewpoints.

Although little has been written directly about dysfunctionals' view of themselves, numerous clinical accounts suggest that men with erectile dysfunctions view themselves as "less than men" (e.g., Zilbergeld, 1992). Even the term "impotence" suggests societies' view that a man without an erection is not a "real man." Beyond clinical and anecdotal data, Byrne and colleagues have demonstrated that erotophobia is associated with later sexual difficulties (Byrne & Schulte, 1990). Erotophobia-erotophilia is "the disposition to respond to sexual cues along a negative-positive dimension of affect and evaluation" (Fisher, Byrne, White, & Kelley, 1988, p. 123). Erotophobia is a cognitive set, presumably learned in childhood, characterized by the association of certain erotic cues and behaviors with negative affect (e.g., guilt). As well, cross-sectional research from Barlow's lab suggests dysfunctionals are more erotophobic than their functional counterparts (Jones, Carpenter, Bruce, & Barlow, 1987; Sbrocco, Weiner, & Barlow, 1992). Besides reacting more negatively to erotic cues, dysfunctionals appear more likely to endorse inaccurate information about sex. Baker and de Silva (1989) investigated the relationship between belief in the myths described by Zilbergeld (1978) and sexual dysfunction among men. Dysfunctional men evidence a significantly greater degree of belief for myths about sex (Baker & de Silva, 1989).

Skill Deficit

Behavioral skill deficits are intertwined with the notion that dysfunctionals may have beliefs and attitudes about sex that predispose them to have difficulty becoming aroused. In particular, discrepancy adjustment may be difficult due to skill deficiency. This may be due to lack of experience or practice, or, as described above, it also may be the direct result of the sexual schemas (erotophobia) that hold certain behaviors to be "taboo." For example, take the common scenario of a woman who is non-orgasmic during intercourse. If she refuses to engage in self-

stimulation or receive partner stimulation because this is not "okay" and she "should" be able to have an orgasm the "right way" (coitus), it is likely her dysfunction will remain. Here, her beliefs about sexual behavior impede her from attempting behaviors that would likely help her become orgasmic.

Self-report, as discussed in relation to erotophobia, suggests dysfunctionals endorse a limited sexual behavioral repertoire. This limitation may be conceptualized as both a skill and a knowledge deficit. Such a deficit would make dysfunctionals less adroit at discrepancy adjustment. Of greatest interest is research indicating that this disposition is associated with deficits in sex-specific behavioral responses including learning about sex in an academic setting and effective contraceptive use (Allgier, 1983; Gerrard & Reis, 1989; Goldfarb, Gerrard, Gibbons, & Plank, 1988; Fisher, Byrne, & White, 1983; Byrne & Schulte, 1990). This evidence bears on the possibility, discussed above, that erotophobic individuals are at risk for developing a dysfunction because their cognitive schema does not allow for accommodation and assimilation of new information nor does it provide them with a repertoire of behavioral responses to increase arousal.

Kelly and Strassberg (1990) found anorgasmic women, in addition to reporting more negative attitudes toward masturbation, greater sex guilt, and greater endorsement of sex myths, specifically reported discomfort in communicating with their partner about sexual activities that might increase their arousal or lead to orgasm such as direct coital stimulation. Little of this research has been directly extended to dysfunctionals. Yet, the focus of sex therapy involves helping clients modify their beliefs about sex and teaching behaviors facilitating arousal and indirectly supports the notion that dysfunctionals are skill deficient.

A more formal assessment of self-proscribed behaviors for functionals and dysfunctionals has yet to be examined. Similarly, it would be important to continue to determine the predictive usefulness of this difference in much the same way as Byrne and Schulte (1990). That is, if we know erotophobic individuals engage in certain types of behaviors less frequently (a diathesis), can we show they are at risk for developing a dysfunction? And, can we use such information to predict treatment outcome? For example, learning that oral sex is dangerous or forbidden may make one vulnerable to developing a sexual dysfunction and, additionally, individuals holding less rigid views about behaviors proscribed in sex therapy may do better.

Skill differences have been noted in the lab. As reviewed earlier, laboratory evidence suggests that while dysfunctional males can adjust their arousal according to demand to increase their tumescence they were less aware of this process and generally were unable to describe the strategies they used to make these adjustments (J.G. Beck et al., 1982).

The question remains about whether the absent skills represent a skill deficiency precipitating development of a dysfunction or if they are the result of the sexual dysfunction. To some extent, this appears unlikely particularly considering the tie to the dispositional construct of erotophobia. Yet, this phenomenon may result from task disengagement which is covered later. Nevertheless, this question requires prospective examination.

Negative Outcome Expectancies

A third factor contributing to a sexual dysfunction is negative outcome expectancies regarding discrepancy adjustment. Individuals unable to successfully adjust their behavior will begin to predict failure. As described above, the inability to adjust successfully or regulate behavior may be the result of several factors. According to behavioral regulation theory, negative outcome expectancies, regardless of their source, promote disengagement from the task (cf.,

Carver & Scheier, 1988). Consequently, the expectancy of failure becomes enough to maintain the dysfunction. Thus, it is important to view the development of a dysfunction as a process where a key part of the process is the development of negative expectancies regarding one's ability to mediate arousal to meet one's needs and goals. This likely develops after unsuccessful attempts to mediate arousal.

Recent results from Barlow's lab suggest dysfunctionals, compared to their functional counterparts, report more negative internal thought listing in response to erotica (Bach et al., 1993). These thoughts could be conceptualized as indicators of negative outcome expectancies as the thoughts represented subjects' report of self-relevant failure- or fear-associated predictions. In addition, no differences were found between the number of positive thoughts endorsed by the groups.

Conceptualization of negative outcome expectancies may be relevant within the context of several existing paradigms including those that create such demands either explicitly or implicitly and those that heighten focus of attention and by that could make such expectancies salient. As well, the studies reviewed earlier suggest dysfunctional males respond poorly to laboratory paradigms including "performance concerns." Presumably performance demand for dysfunctional individuals increases the chances an individual would predict failure as they have the added pressure of external demands, whereas functional individuals do not predict failure—they have no reason to.

Interestingly, two recent studies using a misattribution paradigm provide the strongest evidence to date that manipulating expectancies can greatly affect sexual response (i.e., Cranston-Cuebas, Barlow, Mitchell, & Athanasiou, 1993; Bach, Brown, & Barlow, 1999). In a within-subjects design employed by Cranston-Cuebas and colleagues (1993), functional and

dysfunctional male subjects viewed erotic films following the ingestion of each of three placebo pills. Subjects were given an inert substance and told this would enhance, detract, or not affect their erection. Surprisingly, as shown in Figure 8, functional individuals exhibited a reverse placebo response, responding with increased tumescence to the detraction manipulation (see Figure 8). Tumescence in the detraction condition was greater than responding in the enhancement or control conditions for which there were no differences. Dysfunctional individuals, however, responded with a direct placebo effect exhibiting decreased tumescence to the detraction condition. Tumescence did not differ in the enhancement and control conditions. Arousal during the detraction condition was lower than tumescence in the enhancement and control condition. Interestingly, despite differences in tumescence, there were no differences in subjective arousal across the three conditions for both functionals and dysfunctionals. In addition, a majority of the subjects (70% of the functionals, 60% of the dysfunctionals) believed the "active" pills had no effect on their erectile response. Functionals believed the enhancement and detraction pills had 8% and 13.5% control, respectively, over their tumescence. Dysfunctional subjects reported 9% control for enhancement and 24% control for detraction.

In the second study, Bach, Brown, and Barlow (1999) provided false negative tumescence feedback or no-feedback to sexually functional college males. False negative feedback subjects were told over an intercom immediately following an erotic film, "Are you finding it difficult to become aroused? . . . The information that we are getting on our computer is not what we would typically see for someone who is feeling very aroused. Let me see if I can print out the results from that last film and I will explain them to you." Upon entering the room, the experimenter showed the participant a bogus printout of his response as well as a scoring sheet that indicated the response was below that of the average participant. The experimenter

then said, "This is not a problem. It happens from time to time. However, we do know, from having done many of these assessments, that if someone does not become aroused during either the first or the second film, it is very unlikely that he will become aroused during the third film. Why don't we go ahead and finish the assessment anyway. I will answer any questions that you have afterwards."

Results indicated that while there were no significant changes in the no-feedback group, the false negative feedback manipulation lowered the level of efficacy expectancies and led to a significant decline in penile tumescence. The results are presented in Figure 10. The false negative feedback in this study was designed to significantly decrease expectancies and was evidently effective in doing so. The authors describe the negative feedback as "harsh" (Bach, personal communication, 1997). A less "powerful" (or more subtle) feedback manipulation would not be expected to negatively impact functional responding, mimicking a relatively common experience. The feedback was harshly presented to the subjects between the second and third films they viewed and was evidently effective in lowering their confidence and outcome expectancies. Interestingly, despite its effects on physiological arousal, false feedback did not lead to a significant decline in subjective arousal or an increase in negative affect.

The results of these studies illustrate two important steps in behavioral regulation: discrepancy monitoring and outcome expectancies. Applying a self-regulatory model to these results, it appears that functionals would only seek to reduce discrepancy in the condition where they feel challenged. That is, they have essentially been provided with feedback that they will not be aroused enough or are currently not aroused enough and they then use their skills to reduce this anticipated or current discrepancy. It is here they notice or have their attention focused on the potential for a discrepancy. In response to this "threat" or challenge, they regulate their

behavior, that is, they increase tumescence. Functionals have the skills, positive outcome expectancies, and confidence to effect change. It is important to note that engagement in discrepancy adjustment hinges on the notion that most males in U.S. culture have a somewhat distorted sexual self-schema and thus would find decreased tumescence to be a "bad" thing. The enhancement condition, on the other hand, provides a very different set of circumstances for the functional individual. There is less "threat" to attend to discrepancy because no discrepancy is expected or experienced—they have been told they will get aroused or are aroused, and they always get aroused.

Applying the same type of rationale to dysfunctional individuals' performance in the Cranston-Cuebas and colleagues (1993) study, the detraction pill likely magnifies their typical response process characterized by an increased salience in negative outcome expectancies and decreased confidence in their ability to perform. The detraction pill would not challenge dysfunctionals as it did the functionals. Rather, this condition would represent confirmation of their status quo, that is, their negative expectancies. Therefore they have little reason to even try to respond. In fact, they may not be task engaged at all. An enhancement manipulation would only increase tumescence if dysfunctional individuals changed their outcome expectancies such that they believed this change could occur and had the skills to adjust arousal.

An interesting issue is whether changing outcome expectancies is sufficient to break the negative feedback cycle. It is easy to imagine only temporary improvement if skills and core cognitions are not dealt with. This phenomenon likely represents the temporary "cure" sometimes experienced by individuals at the start of treatment. The Bach, Brown, and Barlow (1999) study went a step further by providing subjects false feedback about their erections between films, which undoubtedly has a greater impact on confidence and expectations than

merely providing a pill that they are told may make erections more difficult to achieve. The next logical step in this line of research would be to expand the Bach, Brown, and Barlow (1999) study by providing real-time false-negative, accurate, false-positive, and no-feedback to groups of functional and dysfunctional men while they are viewing the film. In summary, dysfunctional individuals have little confidence in their ability to become aroused. This is not unlike predicting failure for any activity if you are not making headway.

Avoidance: Covert and Overt Disengagement

The fourth factor characterizing dysfunctional sexual arousal is task disengagement. Two aspects of disengagement are important in understanding the etiology and maintenance of sexual dysfunctions. First, disengagement results from an inability to regulate behavior and therefore can be characterized as a secondary factor. That is, it is not a primary or vulnerability factor like an erotophobic schema. Second, disengagement also contributes to the maintenance of the problem.

Task disengagement is a natural response for individuals doubting their ability to cope and expecting failure (Carver & Scheier, 1988). The probability of disengagement increases in the presence of physiological arousal which increases the salience of the negative cognitions. For individuals in a sexual situation, immediate behavioral withdrawal may manifest itself as "giving up" after losing an erection and eventually as decreased frequency of sexual behavior.

In the sexual situation, behavioral disengagement is not always possible due to such things as social constraints and hierarchical goals that make the impact of disengagement "catastrophic" (see Carver & Scheier, 1985). Consequently, disengagement may be covertly expressed through self-distraction or off-task thinking. In addition, covert disengagement may be difficult to sustain due to the contextual cues that prompt task engagement. Reengagement

prompts re-experiencing the cycle of anxiety, negative outcome expectancies, doubt, and disengagement. This cycle, described by Carver and Scheier (1988) as self-deprecatory rumination, is similar to the construct of self-focus used by other theorists (Sarason, 1975; Wine, 1982). We will return to a conceptualization of self-focus in the sex literature following a review of empirical data on disengagement.

Overt withdrawal and avoidance have received little attention in the literature. Operationalizing overt withdrawal as ceasing task engagement, Sbrocco and Barlow (1996) examined subjects' retrospective reports of ceasing to try to obtain an erection, that is, "quitting," when they lost their erection during partner-related sexual behavior. Ninety percent of men seeking help for erectile dysfunction reported they quit. Interestingly, men were fairly equally distributed in their reported response to quitting. Approximately half ceased sexual behavior altogether while the others reported focusing on pleasuring their partner to climax. However, no data are available on functionals' response to difficulty. Interestingly, preliminary results for a study underway where functional and dysfunctional men are asked to either fantasize about a successful or unsuccessful sexual situation provides indirect evidence of this avoidance (Weisberg, Sbrocco, & Barlow, 1994). To that point in time, all of the dysfunctional males had refused to participate in the unsuccessful fantasy while none of the functionals had objected. In fact, functionals reportedly became equally aroused to fantasies incorporating erectile difficulty. The implication being, dysfunctionals avoid engaging in a behavior for which they have "no chance" and negative expectancies. In fact, a primary treatment component for erectile dysfunction is to teach men to lose their erection and regain it (e.g., Zilbergeld, 1992).

Data from Barlow's lab suggest dysfunctional individuals attempt intercourse less frequently, controlling for partner availability (Sbrocco & Barlow, 1996). In addition,

retrospective report suggests frequency before the development of the dysfunction is similar to functionals' frequency. While this may seem documentation of the obvious, it is important to provide empirical evidence of behavior that behavioral regulation theory conceptualizes as withdrawal and avoidance.

Self-Focused Attention, Distraction, and Task Engagement

Most empirical evidence regarding focus of attention suggests the mechanisms outlined in the model but is currently not sufficient to conclude with any certainty what is occurring in the "black box" (Sbrocco & Barlow, 1996). In essence, an integrated model of sexual arousal and sexual dysfunction illustrates three points or processes at which to examine attentional focus. These stages, illustrated in Figure 9, include initial task engagement or orientation to the task, intermediary task engagement focused on discrepancy adjustment, and sustained task engagement or disengagement (see Figure 9).

Functional task engagement begins with attention to erotica followed by discrepancy adjustment and sustained attention to erotica and task engagement. Dysfunctional individuals, however, take a different path. There is reason to believe that dysfunctionals, at least for a time, focus on erotic stimuli. However, their inability (or perceived inability) to regulate arousal results in off-task thinking and eventually withdrawal, overtly or covertly. Sbrocco and Barlow (1996) hypothesize, in order to understand attentional focus, researchers must define the stage they are examining. In addition to stage of engagement and functional status, the chronicity or severity of the dysfunction is expected to influence this process. Sbrocco and Barlow (1996) suspect, the more experience individuals have with failure, the less they try to regulate, and therefore, they spend little time in the initial stages. At its extreme, this is reflected in avoiding sex altogether. The conceptualization of sexual arousal as a process has important implications for refining our

definitions of terms in sexuality research including the constructs of distraction and self-focus. What follows is an attempt to clarify use of these terms and, more importantly, to define the phenomena they purport to characterize by drawing on the self-regulatory aspects of Sbrocco and Barlow's (1996) model of sexual dysfunction.

Defining Self-Focus

As Carver and Scheier (1988) and others (cf. Ingram, 1990) point out, the term "self-focus" can be potentially misleading and must be carefully operationalized. Self-focus is involved somewhat in both functional and dysfunctional task engagement. Therefore it is important to define self-focus incorporating a more general definition (Ingram, 1990) and to define it capturing the construct as it has been used within the area of sex research.

Generally, self-focus within the context of sex research refers to the process by which an individual attends to information that originates from within and concerns the self. It is defined as a process and by its content. The content is hypothesized to concern negative affect and negative self-statements or performance-related concerns rather than positive affect and an erotophilic focus. The process refers to mechanisms by which the focus becomes self-deprecation rather than erotophilia. Behavioral regulation provides etiological and maintenance mechanisms for this process beginning with discrepancy adjustment. Both functionals and dysfunctionals attempt to adjust their behavior. However, due to a multitude of reasons, the result is an inability to regulate behavior for the dysfunctional individual. This process, by definition, can be described in terms of task engagement. Thus, it seems important to consider defining task engagement as attention to erotica. Task disengagement is characterized by both the process of becoming disengaged and the content of the cognitive activity (be it self-focused on self-deprecatory statements or "non-sex"-related thoughts).

In the view of Sbrocco and Barlow (1996), the difference between facilitation and dysfunction depends not on the presence or absence of self-focus per se, but on a difference in the processes taking place in the person. The individual with favorable expectancies remains "functionally" task engaged, even when highly anxious and highly self-focused. As a result, the phenomenology of this person may be conceptualized as task focus rather than self-focus. Yet, from a self-regulatory framework, self-focus is implicit in task focus (Carver, Blaney, & Scheier, 1979; Scheier & Carver, 1983). That is, in order to monitor behavior in task performance, one must be focused on oneself. For the person whose performance is deteriorating, the self-focus is on different aspects of the self. This person's attention is focused on perceived deficits, salient doubts, and the possible larger ramifications of being unable to proceed toward his or her goal. In many ways, this conceptualization parallels that used in research on test anxiety suggesting facilitation occurs for individuals if their expectancies are favorable (Carver, Peterson, Follansbee, & Scheier, 1983; Rich & Woolever, 1992). That is, subjects about to take a test are all equally physiologically aroused. However, only those with doubts perform poorly (assuming they know the material, of course). In summary, self-focus in the sex literature has often been used as an "either-or" construct where dysfunctionals are conceptualized as "self-focused" on performance concerns at the expense of erotic cues. It may be helpful to characterize the nature of the self-focus by defining not only the affective valence and intensity but the context of the focus as task engagement or task disengagement. The idea being, as described above, both groups may attempt task engagement. Functionals focus on erotic cues and dysfunctionals focus off-task after trying to engage and regulate their behavior.

Defining Distraction

The term "distraction" has been used in the sex literature to describe several phenomena. As reviewed earlier, distraction has also been used as a dependent variable in laboratory paradigms examining sexual arousal. Generally, distraction refers to attentional processes diverted away from the "correct" attentional focus (i.e., erotic cues). Mechanisms of action underlying dysfunctional performance have focused on increased self-focused attention whereby negative performance-related concerns become salient. This process has been conceptualized as "distraction" and, at times, this definition implies that distraction is deliberate or purposeful. Similarly, at first glance, this definition suggests that if we could prevent distraction, functional performance would result. Dysfunctional individuals may appear distracted at four points or during four processes: initial task engagement, discrepancy adjustment, disengagement, and reengagement prompted by situational cues. Thus, indicators of distraction may include the self-performance concerns during initial task engagement, off-task thinking during disengagement, or rumination during reengagement. Behavioral regulation suggests that while performance concerns likely distract individuals from an erotic focus, this dysfunctional task engagement is the result of these processes.

Thus distraction in the existing literature may be synonymous with both ineffective task engagement and task disengagement. Ineffective engagement refers to the process of behavioral regulation by which individuals initially focus on erotic cues, attempt to adjust their behavior, meet with negative outcome expectancies, and so forth. This process may represent what is typically referred to as a focus on performance concerns. The term "distraction" is commonly used to indicate that attention is diverted from erotica. We must be careful to examine the etiological underpinnings of this phenomenon rather than circularly attributing it to distraction. While this difference in definition is subtle, it highlights etiological mechanisms. Similarly,

distraction may be a label for disengagement. There is no doubt that a focus of attention away from erotica would interfere with sexual arousal. What is key is the process by which individuals exhibit this disengagement. Thus, it may be more helpful to define disengagement as an off-task focus. Distraction, therefore, may be a process or the by-product of this dysfunctional focus rather than defined as a primary operational procedure.

The distraction paradigms described earlier are important in that they provide grounds for an analogue of sexual dysfunction. We have evidence that distraction differentially affects sexual arousal with dysfunctionals showing no change or slight improvement when distracted. Functional males experience a decrement in tumescence inversely proportional to the level of a distracting task. That is, the more distracting the task, the less the arousal. Presumably, this occurs as the result of limitations on the information-processing system (e.g., the bottleneck effect). As distraction increases, attention to erotica decreases. Dysfunctionals, however, are not affected by distraction during laboratory exposure to erotica (Abrahamson, Barlow, Sakheim, et al., 1985).

It is important to emphasize that while distraction mimics sexual dysfunctionals' processing, this does not imply causality for distraction, per se, as the primary mechanism of action. Studies manipulating distraction suggest that functional subjects who are distracted look like dysfunctional subjects. It seems important to emphasize that the dysfunctional may focus on erotic cues; however, the processing of these cues is not arousing. There is little doubt that distraction interferes with processing of erotic cues and that performance concerns (etc.) would function to draw one's attention away from them. However, these points are secondary to ineffective self-regulation. The key issue is how to characterize the processing of cues including etiological and maintenance mechanisms. It may be more helpful to conceptualize

dysfunctionals' process of task engagement as ineffective and/or as disengaged rather than distracted, thereby highlighting mechanisms of action. As well, a definition of the content of this engagement or disengagement is equally important.

We now turn to a model of sexual arousal and response that, although based on studies of women only, appears to have some application to the understanding of male erectile response as well.

Palace's Cognitive-Physiological Process Model of Female Sexual Arousal and Response

As discussed earlier, Barlow (1986, 1988) proposed that anxiety enhances sexual arousal for both functional men and women by facilitating their ability to focus on and attend to erotic cues. For dysfunctional participants, he proposed that anxiety inhibits sexual arousal by facilitating the efficiency with which they distract themselves from sexual stimuli by focusing on non-erotic cues. These conclusions were drawn from research that was conducted with sexually dysfunctional men and generalized to women. Palace and Gorzalka (1990) found that, contrary to the Barlow (1986, 1988) model, for both sexually functional and dysfunctional women, pre-exposure to an anxiety-eliciting stimulus significantly enhanced the rate and magnitude of genital arousal. This effect was consistent across 100% of women with heterogeneous sexual dysfunctions within 120 seconds of the onset of the erotic stimulus. Despite this apparent differential finding among men and women, Palace's line of research and subsequent model of female sexual dysfunction closely resembles and provides support for Sbrocco and Barlow's (1996) model and has implications for understanding male sexual dysfunction.

Palace (1995a) designed an elegant study to answer a series of questions that would identify processes by which cognitive and physiological mechanisms interact to produce sexual response in women. The purposes of the study were to examine the effects of modifying negative

cognitions about sexual arousal through the use of inaccurate feedback of a heightened genital response [positive-false Vaginal Blood Volume (VBV) feedback], identify the relative influences and interactive mechanisms of cognitive and physiological processes on female sexual response, and investigate methods by which these mechanisms can be modified to reverse the dysfunctional process.

Research findings suggest that the interactional influences of a physiological tendency toward low autonomic lability and negative cognitive expectancy produce a negative feedback loop of dysfunctional sexual response among females. Accordingly, strategies to enhance physiological response via general autonomic arousal (through autonomic arousal-eliciting films) and modify negative cognitions (via positive-false genital feedback) were investigated as a means to interrupt the dysfunctional cycle and initiate a positive cognitive-physiological feedback loop of sexual arousal. Empirically derived answers to each of six questions were posited to map, in a linear progression, the cognitive-physiological process:

1. Does increased autonomic arousal enhance (a) physiological (VBV) and (b) subjective female sexual arousal?
2. Does positive-false VBV feedback modify expectations of sexual arousal?
3. Does positive-false VBV feedback modify actual physiological sexual response?
4. If expectations are modified, how do they effect actual physiological sexual response?
5. Does positive-false VBV feedback modify the subsequent subjective experience of sexual arousal?
6. What are the combined effects of increased autonomic arousal and positive-false VBV feedback on (a) physiological and (b) subjective sexual response?

To investigate these questions, Palace (1995a) compared the physiological and subjective responses of 64 sexually dysfunctional women in four conditions: autonomic arousal-evoking or neutral-control pre-exposure videotape stimulus paired with an erotic videotape stimulus (autonomic arousal-erotic [A-E] or neutral-erotic [N-E]); and positive-false VBV feedback or no-feedback. Positive-false feedback stimulus consisted of a prerecorded analog chart from a vaginal photoplethysmograph that depicted the normal VBV responses of a sexually functional woman that was presented to the subject as being her own following the first film series. Subjective measures of arousal were assessed following each of two erotic stimulus conditions and the feedback conditions.

The results of the Palace (1995a) study suggest that for sexually dysfunctional women, increased autonomic arousal enhances genital arousal. The results also revealed that positive-false VBV feedback was effective in significantly increasing cognitive expectations of sexual arousal. Third, positive-false VBV feedback was also effective in increasing actual genital response. This effect was consistent across 100% of the women in the false feedback conditions. Fourth, and most interestingly, those women who significantly increased their *expectations* of sexual arousal following positive-false VBV feedback directly increased their *actual* genital response within 30 seconds. That is, cognitive change directly influenced physiological change. For more than 50% of cases where expectations increased, the physiological response increased to the level of the "false" feedback. Fifth, positive-false VBV feedback further increased the subsequent subjective experience of sexual arousal; that is, perceived physiological change further increased subsequent cognitions. Finally, autonomic arousal combined with positive-false VBV feedback elicited the greatest increases in expectations and subsequent genital response.

The findings from Palace (1995a) point to mechanisms by which cognitive and physiological components form an interactive process that mediates sexual arousal. Autonomic arousal was highly efficient in enhancing physiological sexual response. This enhancing effect of autonomic arousal on sexual arousal has been replicated three times in Palace's program, using both within-subject and between-subject designs, and across heterogeneous samples of women with sexual dysfunctions including desire, arousal and orgasm phase disorders, coital pain disorders, and histories of sexual abuse (Palace, 1995b). Interestingly, autonomic arousal was also successful in increasing expectations of sexual arousal. It was not, however, immediately effective in modifying subsequent genital response or perceptions of sexual arousal. A process flow diagram developed by Palace (1995b) shows the results of the A-E no-feedback group in Figure 11a.

The process for positive-false VBV feedback was somewhat different. Positive-false feedback was effective in increasing expectations of sexual arousal, which in turn enhanced actual vasocongestive response. This pathway between cognition and physiological response is extremely rapid, as demonstrated by the finding that irrespective of stimulus condition, positive changes in expectation were accompanied by significant increases in genital response within 30 seconds of exposure to an erotic stimulus. Significant changes in expectation and genital response subsequently also altered perceptions of sexual arousal. Increased appraisals of arousal may further influence future expectations, thus completing the feedback loop. A study to examine the effects of experience on future expectations is reportedly in progress (Palace, 1995b). A process flow diagram developed by Palace (1995b) shows the results of the N-E false feedback group in Figure 11b.

The combined effects of autonomic arousal and positive-false VBV feedback surpassed the effects of either autonomic arousal or false feedback alone: women in the A-E false feedback group demonstrated an increase in physiological sexual response, a positive change in expectations, and subsequently a further increase in genital response. A process flow diagram developed by Palace (1995b) shows the results of the A-E false feedback group by the bold arrows in Figure 11c. It is important to note that within 3 minutes of exposure to an erotic stimulus, these sexually dysfunctional women achieved levels of genital arousal comparable to sexually functional women (Palace & Gorzalka, 1990).

The finding that false VBV feedback was more effective in increasing expectations and genital response in the A-E as compared to the N-E condition indicates that the effectiveness of false feedback is facilitated by increased autonomic arousal (Palace, 1995b). Because autonomic arousal-eliciting stimuli enhanced genital response, the false feedback was less "false" for these women; that is, genital arousal was amplified, feedback was more accurate, and genital cues may have been more easily detected. These findings show that an increase in general autonomic arousal plays an important role in modifying dysfunctional response because its genital arousal-enhancing effects can replace the positive-false component of feedback with a true-positive response. If accurate feedback were provided to dysfunctional women in the absence of autonomic arousal, negative cues of low genital response could exacerbate the dysfunctional process by validating negative expectations and further impeding physiological response.

In turn, the effectiveness of autonomic arousal was found to be facilitated by feedback. Perhaps autonomic arousal without feedback cannot alter the conditioned lack of attentional focus or facilitate the ability to correctly label these new genital sensations. This is supported by the finding that women in the A-E no-feedback group demonstrated significant increases in genital

response at Stimulus Series 1 and reported greater expectations of arousal at rating 2, but subsequently showed no change in genital response at Stimulus Series 2 or perceptions of arousal at rating 3. The polygraph chart depicting a high vaginal vasocongestive response provided false-feedback groups with information similar to that provided by erection. Without this information, women in the no-feedback groups lacked the reinforcement provided by visual verification that they had responded physically and labeled their sensations accurately. This study provides evidence that for women, as well as for men (Sakheim et al., 1984), visual attention to vasocongestion elicits significantly greater physiological and subjective sexual arousal. The additive function of feedback is therefore to provide information that both facilitates and reinforces positive labeling of genital responses elicited by autonomic arousal.

The Palace (1995a) study demonstrates that the combined effects of a physiologically based intervention to enhance autonomic arousal and a cognitively based intervention to facilitate labeling of genital cues were the most effective method of modifying dysfunctional response. It is important to note that this is an *additive model,* and not a compensatory model where increasing the cognitive intervention can replace the physiological. Rather, these findings suggest that optimal sexual functioning results from the summation of these cognitive and physiological techniques.

Sbrocco and Barlow's (1996) model of sexual arousal can be used to explain the Palace (1995a) findings. It can be argued that Palace broke the cycle of dysfunctional performance among the female subjects by artificially increasing positive outcome expectancies and confidence. Palace successfully moved the subjects from a dysfunctional path to a functional path at the point on the Sbrocco and Barlow (1996) flow chart where the subjects assessed their outcome expectancies and confidence. Although Palace did not further explore the model by

providing neutral and negative feedback, she noted that if accurate feedback were provided to dysfunctional women in the absence of autonomic arousal, negative cues of low genital response could exacerbate the dysfunctional process by validating negative expectations and further impeding physiological response. But this is merely an untested hypothesis. Although the Palace (1995a) study only examined the sexual response of dysfunctional women, some of the important findings may also apply to sexually functional and dysfunctional men. Discovering that men may respond differently in the Palace (1995a) paradigm would provide useful information to the study of sexual functioning. The effects of "neutral-false" and "negative-false" feedback on sexual response could also produce important information for researchers and clinicians. Employing the Palace (1995a) paradigm with sexually functional and dysfunctional men would be a logical extension of the Bach, Brown, and Barlow (1999) study, described earlier.

Summary of Psychological Factors

On the psychological side, a major shift has taken place toward more complex or multidimensional formulations of sexual dysfunction. Cognitive factors, in particular, and the role of perceptual and attentional processes have been highlighted in recent formulations of sexual dysfunction (Cranston-Cuebas & Barlow, 1990; Fichten, Libman, Takefman & Brender, 1988; Rosen, Leiblum & Spector, 1994; Sbrocco & Barlow, 1996). As described by Ackerman and Carey (1995), the effects of anxiety on sexual dysfunction in male patients appear to be mediated primarily by cognitive or attentional processes (Barlow, Sakheim & Beck, 1983; Beck et al., 1987; Cranston-Cuebas & Barlow, 1990). Similar findings have been reported in recent studies of female sexual dysfunction (Palace & Gorzalka, 1990, 1992). Interestingly, in these studies, women were found to be less susceptible than men to the distracting effects of anxiety or sexual performance demands. More recently, Sbrocco and Barlow (1996) and Palace (1995b)

have shown that confidence in one's ability to perform and expectations of future performance are important cognitive mediating factors in sexual performance. They cite results from a number of studies (e.g., Cranston-Cuebas, Barlow, Mitchell, & Athanasiou, 1993; Bach, Brown, & Barlow, 1999; Palace, 1995a) to suggest that manipulating subjects' confidence and expectations profoundly effects their sexual performance.

Taken together, the results of these studies suggest that the role of anxiety in sexual dysfunction needs to be reconceptualized. It appears that it is not anxiety per se that is responsible for initiating or maintaining sexual difficulties in most cases; rather it is the alterations in perceptual and attentional processes that occur in sexually dysfunctional male and female patients. LoPiccolo (1992) has also commented on the role of "meta-performance anxiety," or the cognitive distraction that typically occurs when sexually dysfunctional individuals fail to become aroused in a sexual situation. Similarly, Apfelbaum (1988, 1989) has noted that anxiety about lack of arousal, or "response anxiety", is a frequent concomitant of sexual dysfunction in both genders. The major focus of treatment, according to Apfelbaum, should be on the elimination of performance demands or the "need to be sexual", that frequently underlies sexual desire or arousal difficulties.

Biological Factors

In order to understand how biological risk factors impact male sexual functioning, it is necessary to review what is known about how men achieve erections.

Physiology of Erection

In males, the external sex organs consist of the penis and the scrotum, which contains the sperm-producing testes. Figure 1 contains drawings of the male pelvic region in cross section and a cross section of the penis. The penis contains two paired corpora cavernosa and a corpus

spongiosum. The corpus spongiosum surrounds the urethra, and continues distally to form the glans penis. Each corpus cavernosum is surrounded by a thick fibrous sheath, the tunica albuginea, which encases the sponge-like cavernosal tissue with multiple interconnected lacunar or sinusoidal spaces lined by vascular endothelium. The walls of the lacunae are composed of thick bundles of smooth muscle, the trabecular smooth muscle, and a fibroelastic frame, consisting of fibroblasts, collagen, and elastin (Krane, Goldstein, & Saenz de Tejada, 1989). The tunica is composed entirely of collagen.

The right and left cavernosal arteries, 600 to 1000 μm in diameter, are terminal branches of the hypogastric-pudendal arterial bed. Multiple muscular, corkscrew-shaped arteries—the helicine arteries—approximately 150μm in size, branch off each cavernosal artery and open directly into the lacunar spaces. These muscular vessels, when constricted, create a large pressure gradient between the cavernosal artery and the lacunar spaces (Krane, Goldstein, & Saenz de Tejada, 1989).

Erection is a neurovascular phenomenon. In the flaccid state the penis is under venous oxygen tension and pressure. During erection it is transformed into an arterial organ (Kim, et al., 1993). Three neuroeffector systems control trabecular smooth muscle tone; they also may influence the penile blood vessel smooth muscle tone. Adrenergic nerves constrict penile blood vessel and corporal smooth muscle via norepinephrine or similar adrenergic agonists acting on alpha-1 adrenoceptors (Seftel & Saenz de Tejada, 1991). Blood vessel and corporal smooth muscle relaxation are controlled by cholinergic and nonadrenergic-noncholinergic (NANC) nerves. Cholinergic nerves appear to have a modulatory role over adrenergic and NANC nerves and do not exert a direct effect on the trabecular smooth muscle. Preliminary evidence suggests a similar phenomenon occurs in the cavernosal and helicine arteries (Seftel & Saenz de Tejada,

1991). Cholinergic nerves may, however, have a positive effect on the penile blood vessel and corporal smooth muscle endothelium by inhibiting adrenergic nerves and releasing acetylcholine.

Detumescence is the result of the contraction of penile smooth muscle. The activation of sympathetic constrictor nerves causes an increase in the smooth-muscle tone of the helicine arteries and the trabeculae. This results in a reduction of arterial inflow and collapse of the lacunar spaces, with decompression of subtunical venules and increased venous outflow from the lacunar spaces, returning the penis to the flaccid state (Lue & Tanagho, 1988; Saenz de Tejada, et al., 1985; Lue & Tanagho, 1987).

It should be clear by now that erection requires that a whole constellation of things be right. The nervous and vascular systems have to be capable of responding properly and emotions have to be capable of aiding, or at least not impeding, the process. Anything—physical or emotional—that gets in the way of sufficient blood getting and staying in the penis can cause problems with erections. It is therefore important for clinicians to assess erectile response in various situations in order to pinpoint the most likely cause(s) of an erection problem. Fortunately, a number of tests are available to provide clinicians with information to better understand the extent of erection problems and possible etiological culprits.

With an understanding of how erections occur, the next section reviews current biological explanations for erectile dysfunction.

Biological Theories of Etiology

At the biological level of analysis, penile tumescence requires an intact and functioning physiological network. Traditionally the endocrine, vascular, and neurological systems have been viewed as most important for erectile functioning. Problems in any of these areas can result in erection difficulties, as evidenced in the Massachusetts Male Aging Study (Feldman et al., 1994).

After the Massachusetts Male Aging Study (Feldman et al., 1994) data were adjusted for age, men treated for diabetes (28%), heart disease (39%), and hypertension (15%) had significantly higher probabilities for erectile dysfunction than the sample as a whole (9.6%). Men with untreated ulcer (18%), arthritis (15%), and allergy (12%) were also significantly more likely to develop erectile dysfunction. Although erectile dysfunction was not associated with total serum cholesterol, the probability of dysfunction varied inversely with high-density lipoprotein cholesterol.

Certain classes of medication were also related to increased probability for total erectile dysfunction. The percentage of men with complete dysfunction taking hypoglycemic agents (26%), antihypertensive drugs (14%), vasodilators (36%), and cardiac drugs (28%) was significantly higher than the sample as a whole (9.6%) (Feldman et al., 1994).

Finally, cigarette smoking increased the probability of total erectile dysfunction in men with treated heart disease, hypertension, and untreated arthritis. It similarly increased the probability for men on cardiac, antihypertensive, or vasodilator medications (Feldman et al., 1994).

The following sections address problems in the three major biological systems known to be important for penile tumescence (endocrine, vascular, and neurological), erection difficulties associated with substance use, how potential problems are assessed, and available medical treatment options.

Endocrine Deficiencies

Endocrine deficiencies have long been suspected as a leading cause of erectile difficulties. Among the leading culprits have been abnormally low levels of testosterone and abnormally high levels of prolactin. Empirical research has provided only mixed support for the

hypothesis that reduced testosterone levels are responsible for erectile disorder (Jones, 1985). Several scientific reports document the fact that men with prepubertal levels of serum testosterone can continue to obtain adequate erections (e.g., Davidson, Camargo, Smith, & Kwan, 1983). Other investigators (e.g., Salmimies, Kockott, Pirke, Vogt, & Schill, 1982) have reported that providing testosterone replacement therapy to hypogonadal men leads to increases in the frequency of spontaneous erections. Subsequent, more fine-grained analysis suggests that testosterone may be more important to fantasy-based arousal and sexual desire than it is to externally stimulated erections (Bancroft & Wu, 1983).

Other hormonal problems typically do not impair erectile capacity. Although severe hyperprolactinemia (which is rare) is probably associated with erectile disorder, mild hyperprolactinemia probably does not cause erectile difficulties (Buvat et al., 1985). In summary, most experts agree that hormonal factors are rarely the sole or primary cause of most cases of erectile disorder (e.g., Jones, 1985; Schover & Jensen, 1988).

Because hormonal levels may be important to the sexual health of both men and women, it is crucial that hormonal levels be checked as part of an assessment protocol (Wincze & Carey, 1991). In men, testosterone and prolactin are considered important. For testosterone, values are typically expressed in nanograms per decileter (ng/dl) or in nanograms per milliliter (ng/ml). In most laboratories, the normal range in men is usually from 280 to 1100 ng/dl, or from 2.8 to 11.0 ng/ml. Testosterone values need to be obtained during the early morning. This is because testosterone in males responds to a diurnal cycle, with the highest values recorded during the morning. Testosterone values are usually expressed as total testosterone; this includes both bioavailable and inactive testosterone. The bioavailable testosterone that influence sexual

behavior is a fraction of the total and is composed of both free testosterone and albumin-bound testosterone.

Prolactin is a pituitary hormone that causes the breasts to enlarge and to secrete milk; it is also believed to be important for sexual desire in men. Specifically, higher levels of prolactin have been associated with decreased sexual desire. The normal range for prolactin in men and women (except for women during pregnancy and while nursing, when higher levels are observed) is 0 – 20 ng/ml. A value greater than 20 ng/ml warrants a repeat test, because it may intimate, among other conditions, the presence of a pituitary tumor.

If hypogonadism is diagnosed, treatment with testosterone may be elected, but its use is not well supported. In a critical review, Mulligan and Schmitt (1993) concluded that testosterone increases sexual interest, frequency of sexual acts (although not necessarily penetration), and frequency of nocturnal erections. Thus, it is beneficial for decreased libido but of questionable benefit for erectile dysfunction. Testosterone is available in three forms: oral, intramuscular, and transdermal. Oral testosterone is not recommended owing to the frequency of hepatitis and hyperlipidemia. Most patients are treated with 200 mg of testosterone cypionate intramuscularly administered every 2 to 6 weeks (O'Keefe & Hunt, 1995). The cost of transdermal testosterone may be prohibitive (wholesale cost of $1.88 for 4 or 6 mg daily patch). When treatment with testosterone is elected, it is important to remember two side effects. First, testosterone stimulates the growth of prostate cancer. Second, testosterone increases libido. Patients inappropriately treated with testosterone may experience the frustration of an increased libido without an improvement in erection.

Patients with hyperprolactinemia are generally referred to a specialist for further evaluation and treatment, in particular to assess for the presence of a pituitary adenoma.

Treatment with the dopamine agonist bromocriptine restores potency in most patients (Thorner et al., 1992). Macroadenomas generally require surgical intervention.

Vascular Problems

Vascular diseases and difficulties pose a much more serious threat to erectile functioning (Papadopoulos, 1989). Because an erection is primarily a vascular phenomenon (i.e., erection is achieved by a threefold increase in penile blood flow), malfunctions in either the arterial (inflow) or venous (outflow) systems are likely to result in erectile difficulties. Arterial inflow may be insufficient as a result of any pathological condition that limits the amount of blood reaching the penis; diseases affecting the central pelvic arteries (supplying the legs) and/or the finer arteries (supplying the penis directly) can be implicated. Arteriosclerosis may be the most common cause of arterial insufficiency (Wagner & Metz, 1981). Ruzbarsky and Michal (1977) completed postmortem investigations of 30 men ages 19 to 85 and reported that all men over 38 years of age began to show signs of vascular disease in the penile arteries. The adequacy of the arterial inflow can be assessed with Doppler studies (Jevtich, 1980), and surgical revascularization interventions are available if a specific obstruction exists in the penile artery.

The role of the venous system in erectile disorder has received considerable research attention (e.g., Lewis, 1991; Lue, Hricak, Schmidt, & Tanagho, 1986). The problem of "venous leakage," where arterial inflow of blood is adequate to produce an erection but the venous outflow occurs so rapidly that the erection cannot be maintained, is not uncommon. Assessment of venous leakage problems is possible by inducing an artificial erection with papaverine and studying the escape pattern of the blood from the penis (e.g., cavernosography). Moreover, treatment by surgical revascularization can successfully treat some cases, providing indirect support for this etiological mechanism (Williams, Mulcahy, Hartnell, & Kiely, 1988). It should

be noted, however, that venous leakage problems probably account for only a small percentage of erectile disorder cases, and they may be the most difficult to repair with surgery (Lewis, 1991).

Men who are being evaluated for erectile difficulties will often undergo a penile blood pressure examination. This penile-brachial index is an expression of the relationship between the brachial systolic pressure and penile blood pressure (Wincze & Carey, 1991). This relationship is expressed as the ratio of penile systolic blood pressure to brachial blood pressure. Normally, the pressures should be about equal, and yield a ration of 1.0. If the penile pressure is less (e.g., representative of a decreased blood flow), the ratio will be less than 1.0. Most professionals in the field accept a level below 0.7 as abnormal, indicating vascular impairment of the caliber that would contribute to erectile problems. Typically, ratios are obtained for both the right and left dorsal arteries of the penis. Both need to be in the normal range to rule out a vascular etiology. Finally, like most diagnostic procedures, this measure is not completely reliable, and it should not be the sole measure used to determine vascular function.

The use of surgery for vasculogenic erectile dysfunction is controversial in the majority of patients (O'Keefe & Hunt, 1995). Two main types of surgery are available and may be used together: revascularization and veno-occlusive reconstruction. Cookson and colleagues (1993) studied revascularization surgery with or without venous reconstruction: Of 898 patients referred to a urology practice, 50 were selected to undergo surgery. Of these, 24 had return of sexual function (48%), and 20 had return with the use of penile self-injection, which had previously been ineffective (40%). In assessing these results, it is important to note that this was a highly selected group; only 6% of those referred were offered surgery. In similar uncontrolled studies of selected patients, success rates are reported between 54% and 80% (Carmignani, et al., 1987; Fitch, 1990;

Goldstein, 1986; Goldstein et al., 1990; Konnak & Ohl, 1989; McDougal & Jeffrey, 1983; Pearl & McGhee, 1987; Sarramon et al., 1990; Shaw & Zorgniotti, 1984; and Virag et al., 1981).

Wespes and Schulman (Wespes & Schulman, 1993) reviewed results of surgery for venous incompetence without revascularization. Cure rates varied: 57% for venous embolization, 10% to 90% for various venous ligation procedures, and 0 to 60% for a variety of other techniques. Again, this is a select group of patients, and the authors of the study specifically suggest excluding those with arterial insufficiency.

Neurological Impairment

Neurological impairment can also contribute to erectile difficulties. Potential etiological contributors include diseases of the hypothalamic-pituitary axis (e.g., pituitary lesions), diseases of the spinal cord (e.g., multiple sclerosis), diseases involving the peripheral nervous system (e.g., diabetes and renal disease), and trauma (e.g., spinal cord injury). Type I and Type II diabetes mellitus are among the most common neurologically related causes, which place men at high risk for neuropathy and subsequent erectile disorder. Overall, the evidence suggests that neurological factors are often implicated in diabetic erectile disorder (Meisler, Carey, Lantinga, & Krauss, 1989).

Tests are available to diagnose neurologic erectile dysfunction, but it is unclear who should undergo testing (DePalma, et al., 1990). The two tests most commonly used are the bulbocavernosus reflex (BCR) and pudendal-evoked responses (PER) (Blaivas, Zayed, & Labib, 1981; Lavoisier, et al., 1989; Nogueira, Herbaut, & Wespes, 1990). The BCR measures the electromyographic activity of the bulbocavernosus muscles in response to electrical stimulation of the glans penis. According to one study of 299 patients with erectile dysfunction, an absent response was indicative of a sacral spinal cord lesion (Blaivas, Zayed, & Labib, 1981). A more

recent study has questioned the accuracy of this test (Lavoisier, et al., 1989). The PER measures suprasacral neurologic disease. Electroencephalogram leads are placed over the scalp, and electrodes are placed over the L-1 vertebra. The penis is then electrically stimulated, just as for a BCR, but readings are taken at the lumbar and cortical levels. Again, delayed responses are considered abnormal, but accuracy is unproven (Nogueira, Herbaut, & Wespes, 1990). These tests are not used to screen for an occult neurologic lesion but rather to determine whether known neurologic disease is the cause of erectile dysfunction.

According to O'Keefe and Hunt (1995), there is no specific treatment for erectile dysfunction of neurologic etiology.

Drug-Induced Erectile Dysfunction

Chronic alcohol consumption is also associated with increased risk for erectile disorder, perhaps by instigating premature neuropathy (Schover & Jensen, 1988). The effects of other substances of abuse on erectile functioning are less well studied (Buffum, 1982; 1986). However, it has been suggested that the frequency of erectile disorder among heroin users is 28% - 43%, and 40% - 50% among methadone users (Segraves, Madsen, Carter, & Davis, 1985)—both estimates are considerably higher than is found in the general population. Reliable estimates are not available for other commonly abused substances (e.g., amphetamines, marijuana, and cocaine). Psychiatric medications (including the antipsychotics, tricyclic antidepressants, lithium, and the minor tranquilizers) can also adversely affect erectile functioning (Segraves, 1989; Segraves & Segraves, 1992).

It is widely believed that antihypertensive medications impair erectile functioning (Papadopoulos, 1989). It is important to point out, however, that not all antihypertensive drugs have this effect, and that even where erectile difficulties do occur, these difficulties may be the

result of the disease (e.g., hypertension), its treatment (e.g., the medications), and/or the patient's reaction to the disease-treatment (Bansal, 1988). For example, estimates suggest that 8% to 10% of untreated hypertensives have erectile problems prior to treatment (Oaks & Moyer, 1972), and this is probably an underestimate. Nevertheless, some types of antihypertensive medications do appear to be particularly troublesome, including diuretics (e.g., hydrochlorothiazide, chlorthalidone, and spironolactone), central antiadrenergic agents (e.g., methyldopa, clonidine, and reserpine), some beta blockers (e.g., propranolol), and some calcium channel blockers (e.g., verapamil; Segraves & Segraves, 1992). Finally, it is noteworthy that few studies have provided convincing evidence regarding dose-response relationships, and considerable individual variation (based on age, underlying pathology, relationship factors, etc.) in response is the norm; as a result, it has been difficult—even for experts—to draw well-supported conclusions regarding the antihypertensive-male erectile dysfunction relationship (Papadopoulos, 1989; Segraves & Segraves, 1992).

If erectile dysfunction is believed to be a drug effect, if possible, a trial off medication or switching to a different medication is considered reasonable (O'Keefe & Hunt, 1995). If the medication is implicated, the physician and patient must decide whether the benefits of treatment outweigh this side effect.

Non-Specific Medical Treatments

In addition to those disease-specific treatments already discussed, several other options are available regardless of cause. According to O'Keefe and Hunt (1995), these treatments should be considered for patients with neurogenic erectile dysfunction, those with mixed etiology, and those that do not respond to disease-specific treatments. The choice depends on patient preference as well as cost, risk, benefits, and side effects (O'Keefe & Hunt, 1995).

Vacuum Constriction Devices. Vacuum erection aids consist of a plastic tube attached to a manual vacuum pump. The tube is placed over the penis, and a seal is formed at the pubic wall. A vacuum is created with the manual pump, so that arterial inflow into the penis increases and erection is achieved. A constricting ring may be placed around the base of the penis to reduce venous return and facilitate maintenance of the erection (recommended 30 minutes). These devices cost approximately $400 and may be purchased from the manufacturer with a prescription. Common side effects include bruising (especially in patients using antiplatelet agents), entrapment of scrotal tissue in the vacuum tube, decreased penile skin temperature, impaired ejaculation owing to urethral blockage, discomfort from the pump or band, and pivoting of the penis (owing to lack of erection at the band). Use is contraindicated in patients with sickle cell disease or patients on anticoagulants.

In studies of patients with erectile dysfunction of mixed etiology, patients who choose to try vacuum devices have satisfaction rates of 66% to 93%. These studies are summarized on Table 5 (see Table 5). Reported satisfaction rates are also high in patients with an organic cause, patients with venous leak, patients with a neurologic cause, and patients who have failed a prosthesis. Satisfaction rates are lower in patients who have failed self-injection, sexual counseling, and other treatments (see Table 6).

Direct Delivery of Vasoactive Agents. Another treatment option is the injection of vasoactive agents into the penis, and more recently transurethral delivery of vasoactive agents. Medications commonly used include phentolamine, an alpha-antagonist; papavarine, a nonspecific smooth muscle relaxant; and prostaglandin E. All act by dilating arterioles and thus increasing arteriolar inflow. Erection results within minutes of injection, and the dosage is titrated so erection lasts 30 to 60 minutes. This usually requires several office visits. Side effects

include hematoma, fibrosis, nodule at the injection site, and priapism. Injection therapy is selected by a minority of patients but is effective for patients with various causes of erectile dysfunction. There is a significant rate of side effects, although this seems to be reduced with newer drugs and combinations of drugs.

In his review of the use of injection therapy, Lue (1990) reports successful treatment for psychogenic, neurogenic, and to a lesser extent, vasculogenic erectile dysfunction. In two representative reports on the use of injection therapy, only 10% of patients selected this treatment when informed of their options (Lakin et al., 1990; Virag et al., 1991). Of those that continued treatment, approximately 90% were satisfied, although a significant number developed hematoma or fibrosis at the site of injection.

One of the most recent medical treatments available is the transurethral delivery of alprostadil (prostaglandin E). This product, MUSE, involves the patient inserting a pellet containing alprostadil via a plastic applicator directly to the urethral mucosa for absorption and transfer to the erectile bodies (the corpora cavernosa and the corpus spongiosum). The delivery of alprostadil transurethrally prevents side effects resulting from self-injection of prostaglandin E (i.e., hematoma, fibrosis, nodule at the injection site, and priapism).

In the only study of MUSE in the literature, Padma-Nathan and colleagues (1997) delivered alprostadil transurethrally in a double-blind, placebo-controlled study of 1511 men, 27 to 88 years of age, who had chronic erectile dysfunction from various organic causes. During in-clinic testing, 66% of the men had erections sufficient for intercourse. At home, 65% of the men had intercourse successfully at least once, as compared with 19% of who received placebo. On average, 7 of 10 alprostadil administrations were followed by intercourse in men responsive to treatment. The efficacy of alprostadil was similar regardless of age or the cause of erectile

dysfunction, including vascular disease, diabetes, surgery, and trauma. The most common side effect was mild penile pain, which occurred after 11% of alprostadil treatments, but the pain rarely resulted in refusal to continue in the study. Hypotension occurred in the clinic in 3% of men receiving alprostadil. Hypotension-related symptoms were uncommon at home. No men had priapism or penile fibrosis.

Oral Medications. *Yohimbine.* Yohimbine is the oldest oral medication for erectile dysfunction. The drug is an alpha-2 agonist and acts by inhibiting alpha-1 activity. This inhibition leads to decreased arteriolar tone and thus increased penile inflow. The recommended dosage is 5.4 mg three times a day, at a wholesale cost of about 15 cents a day. The major side effect is a central nervous system excitatory state, which can lead to increased blood pressure and pulse rate, exacerbation of angina, anxiety, dizziness, and nausea. Morales and colleagues (1987) studied 100 patients with organic erectile dysfunction as determined by abnormal nocturnal penile tumescence and evaluation by a urologist and psychologist. Patients received yohimbine or placebo in a double-blind trial. Forty-three percent reported response to yohimbine compared with 28% for placebo. The response rate was unaffected by age, penile brachial index, testosterone, FSH, or prolactin levels or the coexistence of diabetes, paresthesias, peripheral vascular disease, or use of insulin or antihypertensives.

Sildenafil (Viagra). Since its approval by the FDA in 1998, Sildenafil has become a widely used drug whose reputation has taken on near mythic proportions. Sildenafil is an inhibitor of phosphodiesterase type 5 (PDE5), which leads to increased levels of cyclic guanosine monophosphate (cGMP) in the corpus cavernosum and results in smooth muscle relaxation and increased inflow of blood. The cost of sildenafil is approximately $12 per tablet and is dosed as needed. Sildenafil is generally well tolerated by most patients according to the available clinical

trials. Goldstein, Lue, Padma-Nathan, Rosen, Steers, and Wicker (1998) conducted two trials of sildenafil with a total of 861 patients. Adverse effects included headache (12 to 30 percent), flushing (10 to 27 percent), and dyspepsia (3 to 16 percent) with rates being dose dependent. Additionally, dose-dependent transient visual disturbances, or changes in the perception of color hue or brightness, were reported by 2 to 9 percent of men. The manufacturer reports a rate of 3 percent for transient color vision changes. Between 6 and 15 percent of patients withdrew from the trials during treatment with sildenafil compared with 8 to 17 percent of those receiving placebo. Discontinuation because of treatment-related adverse effects was 1 to 2 percent. Additional reasons for discontinuation included insufficient response, protocol violations, and withdrawal of consent, among others. Recently there have been several reports of deaths occurring with concurrent sildenafil and nitrate use. These drugs in combination cause potentially fatal decreases in blood pressure. According to the manufacturer, sodium nitroprusside use is also contraindicated, but other nonnitrate vasodilators have not been shown to be a problem.

Goldstein et al. (1998) conducted two trials on patients with organic, psychogenic, and mixed erectile dysfunction. The first trial was a 24-week dose-response study that included 532 men taking either 25-, 50-, or 100-mg doses of sildenafil or placebo as needed (generally 1 to 2 hours before anticipated sexual activity). All doses of sildenafil resulted in significantly greater changes from baseline than did placebo in regard to frequency of penetration and maintenance of erection after penetration. Improved erections were reported by 56 percent, 77 percent, and 84 percent of patients, respectively, compared with 25 percent receiving placebo.

The second trial conducted by Goldstein et al. (1998) lasted 12 weeks and included 329 men. They were given placebo or 50 mg of sildenafil, escalated to 100 mg depending on

tolerance and efficacy, to be taken on an as-needed basis. Men receiving sildenafil had significantly greater improvements from baseline with respect to frequency of penetration and maintenance of erections after penetration. When stratified according to cause of erectile dysfunction, patients with mixed erectile dysfunction (organic plus psychogenic) were the only ones who did not have a higher frequency of penetration when taking sildenafil. During the last 4 weeks of treatment, 22 percent of all attempts at intercourse of patients receiving placebo were successful compared with 69 percent of those receiving sildenafil. In addition 74 percent of patients receiving sildenafil reported improvement in erections compared with 19 percent of those receiving placebo.

Phentolamine. Phentolamine is the newest of the oral treatments for erectile dysfunction. The drug acts by antagonizing alpha-1 and alpha-2 adrenergic receptors, leading to smooth muscle dilation and increased blood flow. Information on the cost of phentolamine is unavailable. Unlike the injectable and suppository medications, all oral treatments for erectile dysfunction require sexual stimulation to achieve erection. Nasal congestion was reported as the only adverse effect, with one patient experiencing it, in the smallest study of phentolamine (Gwinup, 1988). In two trials reported by Zorgniotti (1994), 6 percent of patients complained of nasal congestion and 2.3 percent complained of faintness or dizziness, relieved by lying down. Another study excluded patients with intolerance to phentolamine (increased blood pressure and pulse) before randomization by giving a test dose; therefore, no adverse effects were mentioned in the results (Becker, Stief, Machtens, Schultheiss, Hartmann, Truss, et al., 1998). This methodology could limit the generalizability of these results to general practice. Information available from the manufacturer of phentolamine lists insomnia, nasal congestion, and dyspepsia as common adverse effects.

Zorgniotti (1994) conducted two trials on patients with varying causes of erectile dysfunction, including those with diabetes or vascular of nonspecific causes. The first trial was an open-label trial comparing phentolamine hydrochloride 50 mg with phenoxybenzamine 10 mg orally. Eighty-five patients were asked to take each drug at least 3 days apart and 1.5 hours before attempting coitus. Forty-two percent of patients were able to achieve full erection sufficient for intercourse with phentolamine compared with 9 percent taking phenoxybenzamine. The second trial was single blinded and included different patients from the first trial but with the same causes of erectile dysfunction. Buccal phentolamine mesylate 20 mg was compared with placebo. Patients were asked to place the tablet between their gum and cheek 20 to 30 minutes before coitus, each on a different day. Full erections were achieved by 32 percent and 13 percent of patients when receiving phentolamine and placebo, respectively.

Penile Prostheses. Penile prostheses are designed to provide sufficient penile rigidity for intercourse. Patients often mistakenly believe that the prostheses provide an erection similar to their prior normal erections and that they also correct problems with libido, orgasm, and ejaculation. It is important to discuss realistic expectations so that patients may make an informed decision. There are three commonly used types of prostheses: semirigid rod, malleable rod, and inflatable prosthesis. The semirigid rod maintains a constant shape and size but may be curved either up or down. The malleable rod maintains a constant size but may be straightened and curved as desired. The inflatable prosthesis consists of a pumping mechanism often placed in the scrotum, which transfers fluid from a retrocystic reservoir to the prosthesis. With pumping, the prosthesis enlarges and straightens. The major cost of penile prostheses is related to surgical implantation. Common complications include postoperative infection, perforation of the urethra

or corpora, extrusion of the device, and mechanical problems. Also, because of disruption of normal anatomy, patients who fail this treatment are often unable to benefit from other options.

In a review of the literature, Petrou and Barrett (1990) report surgical success rates of 82% to 98% with various types of prostheses. The authors believe penile prostheses are an appropriate treatment option for patients with normal libido, who are willing to accept the surgical risk and unwilling to try or unable to achieve success with more conservative treatments.

Summary of Biological Factors

Overall, then, there are many physiological factors that can impair erectile functioning. It is necessary to determine whether hormonal, vascular, pharmacological, or neurological problems are operating prior to beginning an intensive psychologically based assessment and treatment.

In summary, erectile dysfunction is clearly associated with many conditions, and certain risk factors have been identified, some of which may be amenable to prevention strategies. Diabetes mellitus, hypogonadism in association with a number of endocrinologic conditions, hypertension, vascular disease, high levels of blood cholesterol, low levels of high density lipoprotein, drugs, neurogenic disorders, alcohol ingestion, and many chronic diseases, especially renal failure and dialysis, have been demonstrated as risk factors. Vascular surgery is also often a risk factor. Age appears to be a strong indirect risk factor in that it is associated with an increased likelihood of direct risk factors. Other factors require more extensive study. Smoking has an adverse effect on erectile function by accentuating the effects of other risk factors such as vascular disease or hypertension.

Unfortunately, our understanding of the etiology of erectile dysfunction is preliminary and incomplete. Traditionally, efforts to understand the cause of Male Erectile Disorder have been dualistic; that is, etiological formulations, diagnostic procedures, and therapeutic

interventions reflected the view that the problem was either organic (e.g., biologically caused) or functional (e.g., psychologically caused). Consequently, treatment often begins and ends in the physician's office. Even when medical treatment proves effective in improving tumescence, the issue remains whether the symptom or cause should be treated. It is often assumed by physicians and even patients that if medical treatments can improve sexual functioning, then the problem must have been of biological etiology. We now understand that most sexual problems involve a complex interaction among biological, psychological, and social risk factors. Several recent studies have demonstrated that at least two "causes" (e.g., risk factors) have been found in two thirds (or more) of all cases (Buvat, Buvat-Herbaut, Lemaire, Marcolin, & Quittelier, 1990). Assessment and treatment may require input from multiple disciplines and therapeutic strategies in order to address the multiple causes of the disorder. Furthermore, what initially started the problem may not be what is maintaining the problem.

As noted earlier, with few exceptions, patients presenting with complaints of erectile difficulties should undergo a physical evaluation. Information about a patient's medical history and visits to physicians should be a routine part of the initial screening interview (Wincze and Carey, 1991). The interview may be supplemented with a medical history questionnaire that asks for basic information about chronic and acute medical conditions, medication use, surgical history, congenital disorders, hospitalizations, significant medical problems within the extended family, and visits to physicians. Even when a careful interview has been conducted and additional information collected with self-report questionnaires, it may be necessary for the patient to undergo further medical evaluation. However, a thorough evaluation of an erection problem should not be limited to medical tests. A complete assessment would include an

evaluation of the impact of psychological processes on physiological responding. A description of psychophysiological assessment procedures follows.

Psychophysiological Assessment

Psychophysiology permits inferences about psychological processes that are based upon physiological measures (Cacioppo & Tassinary, 1990). Thus, if used appropriately, these measures can be powerful tools in the assessment armamentarium. The two psychophysiological methods most commonly employed with men are nocturnal penile tumescence (NPT) and daytime arousal studies.

Nocturnal Penile Tumescence

The physiological recording of NPT, usually in a full sleep laboratory or center, has not been relied on heavily to distinguish organic from psychogenic erectile dysfunction. The theoretical basis for nocturnal penile tumescence monitoring is that an intact "erectile mechanism" must exist to produce an erection during sleep. Thus, if erectile dysfunction is due to psychological inhibition during sexual activity, nocturnal erections should be normal. The normal man experiences three to five erections per night, each lasting 25 to 35 minutes (Wincze & Carey, 1991). A formal NPT study involves monitoring for three consecutive nights in a sleep laboratory (Wincze & Carey, 1991). Nocturnal erections occur only during rapid eye movement (REM) sleep, so electroencephalographic, electro-oculographic, and electromyographic activity is recorded to document sleep quality and to avoid a false-negative study. In addition, penile circumference is measured with strain gauges at the base and tip of the penis. When an erection is detected, the patient is awakened and axial rigidity is measured by assessing the resistance of the penis to buckling when a known weight is applied to the glans penis. A positive test is

"normal" or suggestive of a psychogenic cause of erectile dysfunction (Fisher et al., 1979; Van Hueten, Verheyden, & Van Camp, 1992).

A number of concerns about the validity of NPT monitoring have been raised (Morales, Condra, & Reid, 1990). First, there are methodological problems with the early studies. Patients were included in study groups partly based on their NPT results, thus inflating differences between groups. One small study that avoided this flaw found that NPT results agreed with the diagnosis established by clinical criteria 80% of the time (Marshall, Surridge, & Delva, 1981). Second, the gold standard for diagnosing psychogenic erectile dysfunction is unclear. This problem has led to case reports of patients diagnosed with psychogenic erectile dysfunction by NPT later presenting with a pituitary adenoma or patients with depression being diagnosed with organic erectile dysfunction by NPT and nocturnal erections normalized after treatment of the depression (Roose et al., 1982; Schwartz, 1990). Finally, nocturnal erections may not reflect the erectile potential in the erotic or sexual situation. Organic conditions such as sensory neuropathy may increase latency to erection during sexual activity but have no effect on nocturnal erections.

Despite these problems with NPT monitoring, it became a widely accepted diagnostic tool in the evaluation of erectile dysfunction, but more convenient, less expensive methods were desired. The first home monitoring method developed was the stamp test (Barry, Glank, & Boileau, 1989; Marshall et al., 1982; Marshall et al., 1983). Four postage stamps were wrapped snuggly around the penis, overlapping by at least one half of a stamp. The patient simply noted if the perforations were broken by morning. Although simple and inexpensive, studies have not found the test accurate enough for clinical use (O'Keefe & Hunt, 1995).

The Snap-Gauge device (Dacomed Corp., Minneapolis, MN) was introduced in 1982. Small studies suggest that the sensitivity is around 90% with a specificity of 40% to 50% (Allen

& Brendler, 1990; Anders, Bradley, & Krane, 1983; Condra et al., 1987). At a cost of only $12, compared with over $700 for NPT monitoring, many authors believe this instrument may be useful for screening purposes.

The most recent device to become available is the RigiScan (Dacomed Corp., Minneapolis, MN). This is a battery-powered device that is strapped to the patient's thigh and uses two mercury-in-rubber strain gauges to measure penile circumference. The circumference is sampled every 15 seconds throughout the night, and these values are stored in the memory of the attached recording device. Preliminary results suggest that this device may not be able to detect mild abnormalities in erectile dysfunction, but more study is needed (Allen et al., 1993).

NPT monitoring is not relied on heavily to distinguish organic from psychogenic erectile dysfunction. At this time, clinical characteristics are used to separate these two groups, and use of the Snap-Gauge is considered only in a limited number of cases (O'Keefe & Hunt, 1995).

Daytime Arousal Evaluation

Psychophysiological measurement of sexual arousal offers an objective view of a person's response to erotic stimuli (Libman et al., 1989; Sakheim, Barlow, Abrahamson, & Beck, 1987; Wincze et al., 1988). Wincze and his colleagues (1988) found that exposing some dysfunctional men to erotic stimulation resulted in full erection responses, even though those men reported an inability to obtain an erection. Though such data can be critically helpful in differential diagnosis, this procedure is not readily available in clinical settings and has been used primarily in research settings.

Wincze and Carey (1991) describe the procedure used in their laboratory. Patients view erotic videotapes for 5 to 10 minutes while tumescence and subjective arousal are monitored using a mercury-in-rubber strain gauge. Stimuli are selected carefully so that they are appropriate

to a person's sexual orientation and exclude material a client might find offensive. The debriefing following this assessment procedure can be especially valuable; they use it to help them to understand the client's cognitive reaction to erotic stimulation. They ask questions about the client's ability to concentrate on the erotic stimuli and his emotional reaction to the stimuli. In addition, the following useful information can be obtained from a daytime arousal evaluation: 1) size of erection/change in circumference; 2) pattern of arousal (e.g., latency to full erection, maintenance of erection, etc.); 3) physical response and/or lack of response to type of erotica (e.g., heterosexual, homosexual, etc.); and 4) concordance of physical response and subjective arousal.

The well known sex researchers Masters and Johnson wrote in their 1994 book *Heterosexuality*, "In the past two decades, a great deal has been learned about the causes of erectile disorders. It is now clear, for example, that physical problems play a much larger role than had previously been thought. Overall, we estimate that close to half of all cases of erectile dysfunction result mainly from organic factors" (Masters, Johnson, & Kolodny, 1994, p. 139). Because researchers are discovering that erection difficulties cannot usually be explained as only biological or psychological in origin, a biopsychosocial perspective seems to be the most reasonable approach when investigating erection problems.

Biopsychosocial Factors

Do we have a good biopsychosocial model of erectile response and sexual functioning? The answer to this question is not quite yet. While there has been an increase in research and biologically-based sexual management techniques, we still do not have a complete model. John Bancraft has taken some of the first major steps in attempting to integrate these areas and develop a true biopsychosocial model.

Bancroft (1997) argues that, whereas the understanding of cognitive processes takes us a certain distance in understanding sexual dysfunctions, and hence their treatment, there remain some crucial gaps in our understanding of the mechanisms which mediate between cognitions and sexual response. He postulates a particular pattern of information-processing leading to the recruitment of a central neurophysiological inhibitory mechanism that results in erectile dysfunction. Bancroft uses this hypothesis to provide an alternative explanation for the results of the Cranston-Cuebas et al. (1993) misattribution study discussed above. He posits that the altered expectation produced by the misattribution effect was associated, in the functional men, with a reduction in the usual level of inhibitory tone, an effect of which the subject was presumably unaware and which did not lead to any revision of his subjective state. In contrast, the dysfunctional men processed the information differently and in a way which either did not reduce inhibitory tone, or actually increased it.

Bancroft posits that nocturnal penile tumescence (NPT), which normally occurs during REM sleep, is further evidence of this central inhibitory mechanism which reduces or impairs genital response. He notes that a characteristic of REM is that nonadrenergic and serotonergic neurons in the locus coeruleus are effectively switched off as if to allow REM to occur. The locus coeruleus is the relay station in an extensive network within the central nervous system, which is linked to the peripheral autonomic nervous system. Although there may be species variability, certain parts of the peripheral sympathetic nervous system are switched off together with the locus coeruleus, and these parts are likely to include those that control the erectile tissues of the penis. He indicated that this provides us with a partial explanation for why NPT occurs during REM – noradrenergic tone in the smooth muscles of the sinusoids in erectile tissue, which normally keeps the penis flaccid, is "switched off" permitting erections to occur.

He offers as further evidence of a central inhibitory mechanism the injection of smooth muscle relaxant drugs into the corpus cavernosum to induce erection. He reports that this is a pharmacological method for overcoming the local noradrenergic constrictor tone, which he postulates plays a crucial part in the inhibition of erection. Various drugs have been injected in this way – some of them specific noradrenergic alpha-1 antagonists, others pharmacologically different, such as prostaglandin E or papaverine. They all have in common the ability to relax the smooth muscle of the sinusoidal spaces of the corpus cavernosum. According to Bancroft, a widespread tendency among clinicians, at least until recently, has been to see this as a peripheral target organ effect, which has nothing to do with psychological mechanisms. Bancroft and others have shown, however, that a substantial proportion of men with assumed psychogenic erectile dysfunction respond poorly to these injections, as if some psychologically induced "inhibitory mechanism" was counteracting the effects of the injection (Buvat et al. 1990; Bancroft and Malone, 1995). Buvat et al. (1990) postulated that this inhibition was a result of increased circulating levels of noradrenaline that resulted from anxiety induced by the injection. Such an explanation is consistent with the traditional model of the autonomic nervous system and its relationship to emotional states.

Bancroft asks the question, if there is a central inhibitory mechanism which, together with its peripheral manifestations, can effectively block sexual response, how do cognitive mechanisms recruit such inhibitory effects? He suggests that clearly there must be some information-processing involved to lead to such inhibition in psychogenic cases. Bancroft concludes that whereas information processing is clearly fundamental and cognitive behavioral techniques will probably remain the mainstay of effective treatment, predictable efficacy will

probably only be achieved when we have clarified the interface between the cognitive processes and the central physiological mechanisms that underlie sexual response.

Krane, Goldstein, and Tejada (1989) offer similar biological explanations for "psychogenic impotence." They suggest that although psychogenic stimuli can facilitate erection, it is also clear that messages from the brain can inhibit the erectile response. The researchers posit that two mechanisms may be involved in the inhibition of erections in psychogenic erectile dysfunction. First, psychogenic stimuli to the sacral cord may inhibit reflexogenic erections and therefore the activation of the parasympathetic dilator nerves to the penis. Second, excessive sympathetic outflow, elevated blood catecholamine levels, or both, in an anxious man may increase penile smooth-muscle tone, opposing the smooth-muscle relaxation necessary for erection. Supporting these hypotheses are studies in animals demonstrating that the activation of sympathetic nerves or systemic infusion of epinephrine causes detumescence of the erect penis (Benard et al., 1988; Diederichs et al., 1988).

Summary of Current Knowledge

Marked changes have occurred in the formulation and treatment of sexual disorders in the 28 years since publication of *Human Sexual Inadequacy* (Masters & Johnson, 1970). In particular, since the early 1980s research and practice in sex therapy has focused increasingly on the role of organic and biomedical factors. In the treatment area, major advances have occurred in the medical and surgical treatment of erectile disorder. Penile implants, intracorporal injection therapy, vacuum pump devices, and oral pharmacological agents have been the focus of significant clinical and research activity. Potential limitations and risks of physical interventions have been noted, however, including adverse side effects and lack of long-term safety and efficacy data. Relatively few studies have evaluated the combined use of medical and

psychological treatment approaches (Althof & Turner, 1992). Psychological approaches for erectile disorder have focused on the use of cognitive-behavioral and interpersonal interventions, usually in combination with traditional sex therapy approaches (Rosen et al., 1994).

Overall, there has been a marked decline in the number of studies evaluating psychological, as opposed to medical or surgical approaches to treatment. As noted by Schover and Leiblum (1994), this trend may be attributed to the lack of funding for sex therapy outcome research, in addition to the increasing emphasis on AIDS prevention and other medical aspects of sexuality. Recent outcome research in sex therapy has focused largely on the effects of medical therapies.

Rosen and Leiblum (1995) posit that two major shortcomings in the field of sex therapy are evident, despite the relative proliferation of new treatment models and techniques. First, there is a paucity of controlled outcome research or studies of treatment process variables in sex therapy (Hawton, 1992, Schover & Leiblum, 1994). Few studies have directly compared biomedical with psychological treatment approaches (Carney, Bancroft & Mathews, 1978; Dow & Gallagher, 1989), nor have any of the studies to date included attention-placebo or waiting list controls. Long-term follow-up of treatment gains is also lacking in most studies (DeAmicis, Goldberg, LoPiccolo, Friedman & Davies, 1985; Hawton, Catalan, Martin & Fagg, 1986). Second, little attention has been paid to theoretical or conceptual formulation in recent years or to the potential relationship between sexual disorders and other aspects of emotional or interpersonal functioning (Hurlbert et al., 1994; Simpson & Ramberg, 1992). Although some attempts have been made to investigate the role of anxiety or cognitive distraction in sexual dysfunction (Beck, Barlow, Sakheim & Abrahamson, 1987; Cranston-Cuebas & Barlow, 1990; Palace & Gorzalka, 1990), this research has had little direct impact on the clinical management of sexual disorders.

As far as theoretical advances, several researchers in the area of sexual dysfunction (e.g., Kaplan, 1974, 1988; Masters & Johnson, 1970; Wolpe, 1958, 1982) have postulated that anxiety, characterized by sympathetic nervous system (SNS) activation, causes sexual dysfunction by disrupting parasympathetic nervous system (PNS) functioning. Wolpe (1982) concluded that sexual arousal and anxiety are incompatible, reciprocally inhibitory responses. Barlow (1986, 1988) proposed a model based on research with men, which suggested that for dysfunctional men and women, anxiety inhibits sexual arousal by facilitating the efficiency with which they distract themselves from sexual stimuli by focusing on non-erotic cues. Based on these assumptions, anxiety-reducing and relaxation techniques, presumed to enhance sexual arousal by decreasing SNS response, are widely used in the treatment of sexually dysfunctional men and women.

However, research findings challenge traditional assumptions about the role of anxiety, and demonstrate that for sexually functional men and women, anxiety has a facilitatory effect on sexual arousal. In studies with men, anxiety has been operationally defined as crossing a fear-arousing suspension bridge (Dutton & Aron, 1974), viewing an anxiety-evoking film segment (Wolchik et al., 1980), receiving the threat of shock contingent on the size of erection (Barlow, Sakheim & Beck, 1983), and receiving performance demand instructions to self-monitor and maintain an erection (Heiman & Rowland, 1983). Similarly, P.W. Hoon, Wincze, and Hoon (1977) demonstrated that sexual arousal is enhanced in sexually functional women when they are exposed to an anxiety-evoking rather than relaxation-inducing film stimulus prior to exposure to sexual stimuli.

The results of the Palace (1995a) study showed that physiological intervention (general autonomic arousal) increased genital response and subsequent expectations of arousal, and that cognitive intervention (positive-false VBV feedback) increased expectations, subsequent actual

genital response, and subjective experiences of arousal. These findings strongly suggest a close causal relationship where physiological processes mediate cognitive response and, reciprocally, cognitive processes mediate physiological. They suggest that the interaction of both cognitive and physiological components mediates the experience of sexual arousal and is essential to the modification of dysfunctional processes of sexual response. This theory is consistent with the biopsychosocial explanations of sexual dysfunction proposed by Bancroft (1997) and Krane, Goldstein, and Tejada (1989).

The result of the Palace (1995a) study is compelling evidence that sexual arousal is predominantly sympathetically discharged like other strong emotions such as fear and anger. It is likely that the negative cognitive component of "anxiety" inhibits sexual arousal. But, as demonstrated in the research described, the physiological component of anxiety (sympathetic activation) facilitates sexual arousal and, when it is paired with positive consequences, serves to increase cognitive response and subsequently physiological response in a positive spiral of sexual arousal. This hypothesis and the findings of Palace (1995a) are consistent with the Sbrocco and Barlow (1996) model of sexual arousal which posits that positive expectations about performance result in focusing attention on erotic cues and functional performance results. Alternatively, negative expectations about performance result in focusing attention on task-irrelevant context rather than erotic cues, and dysfunctional performance occurs.

This line of research has implications for a general approach to the modification of sexual dysfunction. Specifically, strategies directed toward enhancing physiological response and modifying negative cognitions via the pairing of autonomic arousal and feedback may reverse the dysfunctional cycle and initiate a positive cognitive-physiological feedback loop of sexual arousal. The findings of Palace (1995a) and further testing of the Sbrocco and Barlow (1996)

model have implications for behavioral medicine approaches to treatment, where instead of surgery or pharmaceutical techniques, changes in behavior and cognitions are used to change physical problems. In other words, by knowing that modifications in confidence and outcome expectancy is necessary to effect changes in sexual response, cognitive restructuring techniques should be targeted at these areas.

With the background in place, we turn now to the proposed study.

Part III: Specific Aims

Relevance of Study

Great strides have been made in the treatment of psychologically based erectile dysfunction, yet little is known regarding the mechanisms of action for treatment. This stems directly from an inadequate understanding of the etiology and maintenance of the problem. It is now known that erectile difficulties are normal in the sense that they are commonly experienced. Yet only a percentage of men develop a significant clinical problem.

Several useful cognitive models of sexual arousal have been published since Beck developed cognitive theory to explain and treat depression (Beck, 1963; 1964; 1967). The landmark theory proposed by Masters and Johnson (1970) that the primary maintaining factor in male sexual dysfunction is anxiety, specifically, performance anxiety or fear of performance, is still very much in vogue today, despite evidence to the contrary. Attempts at testing aspects of this theory have resulted in more refined models explaining the course of sexual dysfunction. Barlow (1986, 1988) proposed five factors that seem to differentiate sexually functional men from sexually dysfunctional men suffering from inhibited sexual excitement. These factors include differences in affect during exposure to erotica, differences in self-reports of sexual

arousal and perception of control over arousal, distractibility during sexual stimulation, and differential sexual responding while anxious.

Barlow's (1986, 1988) model has been recently revised to incorporate cognitive mechanisms specified by Carver and Scheier (1988). According to Carver and Scheier, as people engage in tasks they self-attend and monitor their actions with regard to their own personal standards. When necessary, they adjust their behavior to conform to their desired goals and outcomes. This behavioral adjustment is basic to self-regulation and operates through feedback control. Sexually functional men are hypothesized to be capable of making adjustments when they experience discrepancies between expected and actual performance. Examples of making adjustments during discrepancies between expected and actual sexual performance include shifting position to improve genital stimulation, using sexual fantasies, and focusing attention on the partner's erotic body parts.

The Sbrocco and Barlow (1996) model hypothesizes that there are three stages of sexual arousal. The first stage includes orientation to the sexual task and the initial engagement. The second stage includes adjustment (or attempted adjustment) to discrepancies, and the third stage involves sustained engagement or disengagement. Sbrocco and Barlow (1996) posit that a key turning point in the path toward functional or dysfunctional performance is whether or not a man feels threatened when he experiences a discrepancy between expected performance and actual performance. If the man does not feel threatened and has the skills necessary to make adjustments to reduce or eliminate the discrepancy, functional performance results. Men who are threatened by the discrepancy assess their outcome expectancy and confidence to perform. Positive outcome expectancy and confidence are believed to overcome the threat and allow for successful adjustments and functional performance. However, men who focus on a negative

outcome expectancy and decreased confidence disengage from the task and experience dysfunctional performance. Sbrocco and Barlow (1996) contend that attentional focus needs to be examined in each stage as the focus changes from stage to stage.

Four paradigms have been employed to examine the impact of confidence and outcome expectancy on subsequent performance. The first of these utilized a misattribution manipulation during which sexually functional and dysfunctional men ingested one of three placebo pills: An erection enhancement pill, an erection detraction pill, and a placebo pill (Cranston-Cuebas, Barlow, Mitchell, & Athanasiou, 1993). While viewing the erotic films, sexually functional men evidenced significantly greater tumescence during the detraction relative to the enhancement and placebo conditions. On the other hand, dysfunctional subjects evidenced significantly lower erectile responses under the detraction relative to the enhancement and placebo conditions.

The second paradigm expands upon a false feedback paradigm employed in the area of test anxiety (e.g., Rich & Woolever, 1988). Groups of high-test-anxious and low-test-anxious subjects received prior success (positive expectancy) or failure (negative expectancy) feedback on a word association task that was presented as predictive of performance on verbal achievement tasks. Half the subjects then completed the subsequent achievement tasks in the presence of a mirror to induce self-focused attention. The result was that high-test-anxious subjects with induced self-focused attention displayed significant performance facilitation under conditions of positive expectancy and significant performance decrements under conditions of negative expectancy. Failure appeared to induce a reactance effect among low-test-anxious subjects. It is easy to draw comparisons between high-test-anxious and sexually dysfunctional subjects and low-test-anxious and sexually functional subjects.

In the third experiment directly relevant to the proposed study, Bach, Brown, and Barlow (1999) provided false negative tumescence feedback or no-feedback to sexually functional college males. Results indicated that while there were no significant changes in the no-feedback group, the false negative feedback manipulation lowered the level of efficacy expectancies and led to a significant decline in penile tumescence. The false negative feedback was harshly presented to the subjects between the second and third films they viewed and was evidently effective in lowering their confidence and outcome expectancies.

Finally, Palace (1995a) designed an elegant study to answer a series of questions that would identify processes by which cognitive and physiological mechanisms interact to produce sexual response in women. The purposes of the study were to examine the effects of modifying negative cognitions about sexual arousal through the use of inaccurate feedback of a heightened genital response [positive-false Vaginal Blood Volume (VBV) feedback], identify the relative influences and interactive mechanisms of cognitive and physiological processes on female sexual response, and investigate methods by which these mechanisms can be modified to reverse the dysfunctional process.

The results of the Palace (1995a) study provided, first, a finding that for sexually dysfunctional women, increased autonomic arousal enhances genital arousal. Second, the results revealed that positive-false VBV feedback was effective in significantly increasing cognitive expectations of sexual arousal. Third, positive-false VBV feedback was also effective in increasing actual genital response. This effect was consistent across 100% of the women in the false feedback conditions. Fourth, and most interestingly, those women who significantly increased their *expectations* of sexual arousal following positive-false VBV feedback directly increased their *actual* genital response within 30 seconds. That is, cognitive change directly

influenced physiological change. For more than 50% of cases where expectations increased, the physiological response increased to the level of the "false" feedback. Fifth, positive-false VBV feedback further increased the subsequent subjective experience of sexual arousal; that is, perceived physiological change further increased subsequent cognitions. Finally, autonomic arousal combined with positive-false VBV feedback elicited the greatest increases in expectations and subsequent genital response.

In summary, the Cranston-Cuebas et al. (1993) study demonstrated that when the expectancies of sexually functional men are challenged by giving them a pill they are told will decrease their erections, their tumescence increases, suggesting they follow the path on the Sbrocco and Barlow flow chart of efficiently focusing on positive outcome expectancies and confidence after assessing these areas. Sexually dysfunctional men, on the other hand, appear to follow the path of focusing on negative outcome expectancies and no confidence, resulting in diversion of attention to off-task stimuli and eventual dysfunctional performance. The results of the Rich and Woolever (1988) study support this hypothesis as negative expectancy improved the performance of low-test-anxious subjects during self-focused attention and lowered the performance of high-test-anxious subjects. Curiously, the sexually functional college males in Bach, Brown, and Barlow's (1999) study experienced decreased tumescence and expectancy when provided false negative feedback, compared to subjects receiving no-feedback. However, this may be because of the harsh method used to provide the negative feedback. The results of the Palace (1995a) study revealed that positive-false VBV feedback was effective in significantly increasing cognitive expectations of sexual arousal and in increasing actual genital response.

The current study expands upon these false feedback paradigms by comparing the conditions of false negative, neutral, positive, and no-feedback; measuring attentional focus; and

examining both sexually functional and dysfunctional male subjects. The purpose of this paradigm was to manipulate the experience of sexually functional and dysfunctional males within a laboratory context to produce a discrepancy between expected and actual sexual performance. This involved providing subjects with false feedback concerning the size of their erections while they viewed an erotic videotape. By examining their outcome expectancy, confidence, and penile tumescence, the path toward functional or dysfunctional performance was experimentally followed. This information will add to the body of knowledge of how sexually functional men differ from sexually dysfunctional men and possibly from where the two part company on the Sbrocco and Barlow (1996) model of sexual arousal. This knowledge may also have treatment implications as it would be very useful for therapists to know what kinds of cognitions (e.g., concerning confidence and outcome expectancies) need to be targeted for restructuring in order to improve sexual response.

Purpose of This Study

The current study extends current research examining the role of confidence, outcome expectancy, and attentional focus in mediating sexual response. Employing a well-established laboratory paradigm used to examine penile tumescence in response to erotic videotape segments, the confidences and outcome expectancies of sexually functional and dysfunctional men were manipulated by providing them with 1 of 4 types of feedbacks regarding their tumescence: false negative, neutral , false positive, or no-feedback. Attentional focus was also measured by using memory for film details to indirectly assess attention. This study builds on and extends current research by addressing three primary questions. These questions are listed below followed by a description of the corresponding hypotheses.

(1) For sexually functional and dysfunctional males, does false negative feedback differentially modify their cognitive set and subsequent penile tumescence?

(2) For sexually functional and dysfunctional males, does false positive feedback differentially modify their cognitive set and subsequent penile tumescence?

(3) For sexually functional and dysfunctional males, is attention to the film associated with penile tumescence?

Hypotheses

To address these issues, the following hypotheses were posited:

(1) For sexually functional and dysfunctional males, does false negative feedback differentially modify their cognitive set and subsequent penile tumescence? Negative false feedback was employed to prompt discrepancy adjustment and reduction, as depicted in stage 2 of Sbrocco and Barlow's model (1996). As described earlier, dysfunctionals and functionals were expected to respond differently to discrepancies due to their differing cognitive sets (outcome expectancies and confidence). The valence and change in outcome expectancies and confidence is believed to be crucial in understanding and predicting physiological responding.

(A) Cognitive Set

(i.) Dysfunctionals. For dysfunctionals, it was expected that false negative feedback would mimic the cognitive process they currently engage in and therefore have a slightly negative effect on their cognitive set. Specifically, dysfunctionals were expected to have negative outcome expectancies regarding their future performance and to have little confidence in their ability to perform, in general. However, the false

negative feedback was expected to confirm their existing cognitive set and their cognitive set was expected to be lower than that reported in the neutral and no-feedback conditions. The following cognitive domains were also expected to *decrease* as a result of negative feedback: arousal, confidence during the film, perceived size of erection, attention to the film, control over erection, arousal caused by the erection score, confidence resulting from the erection score, ability to maintain erection resulting from the erection score, attention to the film resulting from the erection score, control over erection caused by the erection score, perceived accuracy of the erection score, and control over the erection score. Likewise, the following cognitive domains were expected to *increase* as a result of negative feedback: anxiety, attention to the subject's body, negative-type thinking, thought interference, distraction caused by the erection score, anxiety resulting from the erection score, attention to the subject's body resulting from the erection score, and surprise about the erection score.

(ii.) **Functionals.** For functionals, it was expected that false negative feedback would function as a challenge whereby they would assess their future ability and respond with greater confidence in their ability to perform. Unlike dysfunctionals, the functional subjects were not expected to alter their outcome expectancies when they received false negative feedback. The functionals' confidence ratings were expected to be greater than that reported in the neutral and no-feedback conditions.

The following cognitive domains were also expected to *increase* as a result of negative feedback: arousal, confidence during the film, perceived size of erection, attention to the film, control over erection, arousal caused by the erection score, confidence resulting from the erection score, ability to maintain erection resulting from the erection score, attention to the film resulting from the erection score, control over erection caused by the erection score, perceived accuracy of the erection score, and control over the erection score. Likewise, the following cognitive domains were expected to *decrease* as a result of negative feedback: anxiety, attention to the subject's body, negative-type thinking, thought interference, distraction caused by the erection score, anxiety resulting from the erection score, attention to the subject's body resulting from the erection score, and surprise about the erection score.

(B) Tumescence

(i.) **Dysfunctionals.** Following from above, the false negative feedback was expected to confirm the dysfunctionals' negative cognitive set thereby resulting in partial or full disengagement from the task (becoming aroused in response to the erotic videotape). Consequently, dysfunctionals were expected to show little responding. Their level of responding was expected to be lower than their level of responding in the neutral and no-feedback conditions.

(ii.) **Functionals.** For functionals, tumescence was expected to be greater compared to the neutral and no-feedback conditions. Functionals were

expected to react to the artificial discrepancy by increasing their erections. This state was expected to mimic what happens in day-to-day experiences when a functional notices a discrepancy and successfully adjusts responding. As described in the model (Sbrocco & Barlow, 1996), these hypothesized responses in erectile responding were contingent on the expected results for the cognitive set. That is, tumescence was expected to follow confidence ratings and outcome expectancies.

(2) For sexually functional and dysfunctional males, does false positive feedback differentially modify their cognitive set and subsequent penile tumescence? False positive feedback was expected to prompt greater discrepancy adjustment for dysfunctionals than for functionals. Consequently, a greater change in cognitive set and increased tumescence were expected for the dysfunctionals than the functionals. The rationale for these expected findings are provided in greater detail below.

(A) Cognitive Set

(iii.) Dysfunctionals. For dysfunctionals, it was expected that false positive feedback would be noticed as a discrepancy from their typical responding. Noticing the unexpected "success" was expected to result in increased confidence and more positive outcome expectancies than usual. Thus, the false positive feedback was expected to change their existing cognitive set and their cognitive set was expected to differ from their usual experience. The following cognitive domains were also expected to *increase* as a result of positive feedback: arousal, confidence

during the film, perceived size of erection, attention to the film, control over erection, arousal caused by the erection score, confidence resulting from the erection score, ability to maintain erection resulting from the erection score, attention to the film resulting from the erection score, control over erection caused by the erection score, perceived accuracy of the erection score, and control over the erection score. Likewise, the following cognitive domains were expected to *decrease* as a result of positive feedback: anxiety, attention to the subject's body, negative-type thinking, thought interference, distraction caused by the erection score, anxiety resulting from the erection score, attention to the subject's body resulting from the erection score, and surprise about the erection score.

(i.) **Functionals.** For functionals, it was expected that false positive feedback would result in discrepancy adjustment. However, because the functionals already expected to do well, there was not much room for improvement in cognitive set. Consequently, their cognitive set would remain positive and not differ much from their usual experience.

(B) Tumescence

(i.) **Dysfunctionals.** Following from above, the false positive feedback was expected to change the dysfunctionals' negative cognitive set, providing a more optimistic set, and thereby result in greater task engagement. Consequently, dysfunctionals were expected to show better responding. Their level of responding was expected to differ significantly from their

level of responding in the other conditions (negative, neutral, and no-feedback).

(ii.) **Functionals.** For functionals, tumescence was expected to be no different compared to the neutral and no-feedback conditions. Functionals did not have a discrepancy to react to.

(3) For sexually functional and dysfunctional males, is attention to the film associated with penile tumescence? Attention to the film would be associated with tumescence. Attention would be operationalized as a score on a film memory task. Sexual response was expected to be the result of focus on erotica and processing of erotic cues. This process was more broadly referred to as "task engagement." It was expected that Film Quiz scores would be significantly correlated with tumescence, supporting the hypothesis that functional performance is associated with attention to erotica and dysfunctional performance is associated with disengagement.

Part IV: Research Design and Methodology

Subjects

Eighty-three sexually dysfunctional men between the ages of 21 and 60 were referred to this study by local urologists or responded to local advertisement for assessment of erectile dysfunction of psychological origin. A copy of the advertisement is in Appendix B. Dysfunctional subjects were paid $40 for their participation in the study. In addition, they received a free assessment and, where appropriate, were offered a 10-week cognitive behavioral treatment program at no charge. The treatment was conducted by clinical psychology graduate students and supervised by Dr. Tracy Sbrocco. When appropriate, a report summarizing their psychosocial assessment and physiological results was sent to the referring physician.

Twenty-six potential sexually dysfunctional subjects were excluded from the study for: (a) primary diagnosis of Premature Ejaculation (n = 11), (b) primary diagnosis of Male Orgasmic Disorder (n = 2), (c) primary diagnosis of other DSM-IV diagnosis (n = 1), (d) depression (n = 5), (e) the presence of physical conditions (e.g., diabetes, recent stroke, recent heart attack) or medication (e.g., anti-hypertensive) known to be associated with sexual difficulties (n = 5), and (f) current or recent alcohol or substance abuse/dependence (n = 2). The final sample of sexually dysfunctional males consisted of 57 eligible participants. All subjects received a diagnosis of Male Erectile Disorder. All subjects were heterosexual, as determined by the Kinsey Scale. Thirty-five percent were married. The sexually dysfunctional subjects had a mean age of 43.53 years (SD = 10.76, range = 21 to 60 years). Fifty-four percent of the subjects were Caucasian, 33% were African-American, and 13% were Hispanic, Asian, or "Other." Nineteen percent had a high school degree or less and 49% had at least a bachelor's degree.

Fifty-eight age- and race-matched sexually functional men between the ages of 21 and 60 were recruited via local newspaper advertisements and were paid $40 each. A copy of the advertisement is in Appendix B. One potential subject was excluded from the study because of current alcohol abuse and one because he was depressed and also taking an anti-hypertensive medication. The final sample of sexually functional males consisted of 56 eligible participants. The subjects were heterosexual and free of major psychological disturbances and sexual dysfunctions, as determined by semi-structured interview. All subjects were required to give signed consent to view explicit sexual materials. Thirty-nine percent were married. The sexually functional subjects had a mean age of 41.98 years (SD = 10.48, range = 21 to 60 years). Fifty-five percent of the subjects were Caucasian, 39% were African-American, and 6% were Hispanic,

Asian, or "Other." Twenty-five percent had a high school degree or less and 57% had at least a bachelor's degree.

All subjects were randomly assigned to 1 of 4 experimental groups (negative, neutral, inflated, or no-feedback) following a phone screen. Of the eligible sexually dysfunctional subjects, 14 received negative feedback, 14 received neutral feedback, 14 received positive feedback, and 15 received no-feedback. Of the eligible sexually functional subjects, 13 received negative feedback, 13 received neutral feedback, 16 received positive feedback, and 14 received no-feedback.

MEASURES

Clinician Rated

1. **Phone Screen.** Potential subjects were interviewed over the phone using a Phone Screen Form (Appendix C). This semi structured interview was designed to gather general information regarding demographics and medical, sexual, and psychiatric history. Volunteers not meeting inclusion criteria were excluded from this study.

2. **Sexual Dysfunction Interview.** To assess sexual functioning, subjects were administered the Sexual Dysfunction Interview-revised (SDI; Sbrocco, Weisberg, and Barlow, 1995; Appendix E). The interview usually lasts approximately one hour and consists of a thorough assessment of the subject's sexual history, experiences, attitudes, and difficulties. The instrument assists the interviewer in making a DSM-IV diagnosis of a sexual dysfunction.

3. **Structured Clinical Interview for Axis I DSM-IV Disorders.** Subjects were screened for major mood disorders, anxiety disorders, and psychiatric disorders using the screening section of the Structured Clinical Interview for Axis I DSM-IV Disorders – Patient Edition (SCID; First, Spitzer, Gibbon, & Williams, 1994; Appendix F). Follow-up questions were asked of subjects

who responded positively (indicating potential psychopathology) during the screening questions. Subjects were excluded from this study if they were diagnosed with an Axis I disorder.

4. **Organicity/Psychogenic Rating Scale.** Dysfunctional subjects were given a "psychogenic" rating on a scale from 0-5 (0 = psychogenic factors do not appear to be involved, and 5 = psychogenic factors are definitely involved and appear to be the causative and/or maintaining factor in the dysfunction). Subjects completed a medical information form. The project physician reviewed this information and gave each dysfunctional subject an "organicity" rating on a scale from 0-5 (0 = no pathology found, and 5 = definite evidence of pathology directly related to erectile dysfunction). A psychogenic rating of 4 or 5 was necessary for inclusion as a sexually dysfunctional subject. Subjects with organicity ratings of 2 or greater were excluded from the study. The rating scales are attached as Appendix I and J.

Physiological

1. **Penile Circumference.** Each subject measured the circumference of his flaccid penis by wrapping a strip of paper around the mid-shaft of his penis, marking with a pen where the end meets. The interviewer measured the distance of the mark in mm with a ruler. This measurement gave the circumference of the subject's flaccid penis.

2. **Penile Plethysmograph.** Changes in penile tumescence during the two films were measured using a D.M. Davis, Inc., Stretchistor mercury-in-rubber strain gauge that fit on the shaft of the penis. A diagram of the mercury-in-rubber strain gauge described by Fisher and colleagues (1965) is shown in Figure 12. The device consists of a hollow rubber tube filled with mercury and sealed at the ends with platinum electrodes that are inserted into the mercury. These electrodes were attached to a bridge circuit for connection to a polygraph. The operation of the mercury-in-rubber strain gauge depends upon penile circumference changes that cause the rubber

tube to stretch or shorten, thus altering the cross-sectional area of the column of mercury within the tube. The resistance of the mercury inside the tube varies directly with its cross-sectional area, which in turn is reflective of changes in the circumference of the penis. This means that a display of resistance changes in the mercury reflects changes in the circumference of the penis. These circumferential changes can then be rather precisely calibrated as physical units.

A strain gauge at least 5-10mm smaller than the circumference of the subject's flaccid penis was used. Changes in the circumference of the penis lead to changes in the electrical resistance of the mercury column; these changes in resistance were detected by way of a Grass Instruments Dual Mercury Gauge Adapter (Model F-70DMGAC; pre-amplifier). The pre-amplifier output was channeled into a Grass Instruments 78G polysmonograph equipped with a 7P122H amplifier and a 7DAK driver amplifier. Tumescence responses were recorded on polygraph chart-paper, which moved at a speed of 50mm/sec. The polygraph was calibrated prior to each evaluation in order to yield a linear equivalent for changes in penile circumference. A plexiglass calibrating cone was used to estimate the linearity of output. This calibration ensured that changes in erection, quantified as millimeters of penile circumference, corresponded to equivalent pen deflections on the polygraph chart-paper. The strain gauge was calibrated for a range of 40mm, with the flaccid measurement as the minimum circumference. The use of the mercury-in-rubber strain gauge to measure changes in penile tumescence has been shown to be a reliable and valid measure (Laws, 1977; Farkas, Evans, Sine, Eifert, Wittlieb, & Vogelmann-Sine, 1979; Earls, Quinsey, & Castonguay, 1987)

3. **Heart Rate.** Heart rate was measured using a portable Marquette 7-lead Holter monitor. Heart rate monitoring allowed for an objective measurement of arousal during the 2 films. This data was collected for use in a separate study.

Self-Report

1. **Medical Information Form.** Subjects completed a medical history questionnaire (Appendix G). The instrument was created specifically for this study. The form was mailed to the subjects prior to the intake interview and the completed form was reviewed with them during the interview.

2. **Beck Depression Inventory.** Depression was screened using the Beck Depression Inventory (BDI; Beck, 1978; Appendix K). The 21-item self-report instrument is based on a series of key reactions of individuals to particular classes of (potentially) depressing circumstances. Because depression is highly correlated with erectile dysfunction, to ensure that depression was not present among dysfunctional subjects, all dysfunctional subjects were also asked the diagnostic questions from the depression section of the SCID.

3. **Beck Anxiety Inventory.** Anxiety was screened using the Beck Anxiety Inventory (BAI; Beck, 1990, 1987; Appendix L). The instrument asks the subject to rate how much he has been bothered by 21 common symptoms of anxiety during the past week.

4. Confidence and Expectancy Ratings

a. **Erection Prediction Questionnaire.** All subjects were asked to make 2 visual analog scale ratings prior to viewing each film. They rated the maximum size erection they thought they could achieve during the upcoming film and they rated how confident they were in their prediction (Appendix N).

b. **Erection Score Prediction Questionnaire.** Prior to and following the second film, subjects in the feedback groups also predicted their maximum erection score (from 0 to 24), and made visual analog scale ratings of confidence in achieving that score and expected erection size. The erection score was a whole number and they were told the average score was 12 (possible

range from 0 to 24). In reality, there were no actual erection scores and the average score was a fictitious number. Subjects rated their confidence in achieving their predicted scores and expected erection size on visual analog scales anchored by "no confidence" and "no erection", and "maximum confidence" and "full erection", respectively (see Appendix O).

5. Subjective Response Measures

a. **Sexual Arousal Questionnaire.** After each film, subjects' subjective responses to the film and their experiences were assessed using 10 visual analog scales (see Appendix P). They rated their level of sexual arousal, anxiety, confidence in maintaining their erection, size of erection, level of attention to the film, attention to their body, control over their erection, number of negative thoughts, cognitive interference, and how similar the lab experience was to actual sexual situations. In addition, the subjects also completed a thought listing, reporting thoughts they had during the film. This questionnaire (Sexual Functioning Debriefing Questionnaire) was given to all subjects immediately after viewing the first videotape segment. The questionnaire was also given to the control (no-feedback) subjects immediately after viewing the second videotape segment.

b. **Sexual Arousal and Feedback Questionnaire.** The experimental feedback subjects were also asked to complete a Sexual Arousal and Feedback Response Questionnaire following the second film segment (see Appendix Q). Twelve visual analog scale ratings, added to the Sexual Arousal Questionnaire, assessed reaction to the erection score, including distraction, arousal, anxiety, confidence, size of erection, attention to their body, attention to the film, and control over their erection. In addition, this questionnaire assessed perceived accuracy of the erection score, how surprised the subject was by the erection score, and how much he tried to change the erection score.

6. Attentional Measure

Film Quiz. Memory for film details was assessed to measure attention to the erotic stimulus. At the start of the debriefing session, a written test was administered quizzing the subjects on information contained on the last erotic videotape they viewed (see Appendix R). The 20 questions on the test, comprised of multiple choice and true-false items, were in the chronological order of the videotape. The quiz was written by the principle investigator and demonstrated adequate variability in a pilot study with sexually functional volunteers.

7. Timeline of Measures. Table 7 indicates the order of instruments and other information collected during the study. Table 8 lists the order of instruments collected during the physiological assessment.

PROCEDURE

Screening Procedure

1. Phone Screen

The interviews and physiological assessments were conducted by clinical psychology graduate students in the Department of Medical and Clinical Psychology at USUHS under the supervision of Tracy Sbrocco, Ph.D. (a clinical psychologist and assistant professor in the Department of Medical and Clinical Psychology), and Evelyn Lewis, M.D., Department of Family Medicine. All subjects were screened over the telephone and were excluded if they reported current emotional problems, substance abuse, history of heart disease (myocardial infarction, angina, atherosclerosis), hypertension currently treated by medication or untreated BP greater than 150mm systolic or 90 diastolic, history of renal disease, or diabetes. Subjects who reported they are not heterosexual were also excluded from the study.

The study was described in detail to potential participants. Subjects meeting the inclusion criteria were scheduled for an intake interview and physiological measurement session.

Dysfunctional subjects who did not meet the inclusion criteria for this study, or who did not wish to participate in this study, were still offered a complete assessment, including an interview and a physiological evaluation (measurement of their erections while viewing erotic videotape segments). An assessment report was sent to referring physicians. If appropriate, treatment was also offered free of charge.

2. Intake Interview

At the start of the intake interview, informed consent was obtained for participation in the study (Appendix D). In order for a determination to be made regarding DSM-IV diagnosis, several steps were taken during this study. To assess sexual functioning, the subject was administered the Sexual Dysfunction Interview-revised (SDI; Sbrocco, Weisberg, and Barlow, 1995). The interview usually lasted approximately one hour and consisted of a thorough assessment of the subject's sexual history, experiences, attitudes, and difficulties.

3. Organic/Psychogenic Rating

Following completion of the SDI, the dysfunctional subject was given a "psychogenic" rating on a 0-5 (0 = psychogenic factors do not appear to be involved, and 5 = psychogenic factors are definitely involved and appear to be the causative and/or maintaining factor in the dysfunction). A rating of 4 or 5 was necessary for inclusion as a sexually dysfunctional subject. Subjects complete a medical history form. The project physician reviewed this information and gave each dysfunctional subject an "organicity" rating on a scale from 0-5 (0 = no pathology found, and 5 = definite evidence of pathology directly related to erectile dysfunction). Subjects with ratings of 2 or greater were excluded from the study. Assessing sexual dysfunctions on both

dimensions independently rather than treating psychogenic and organic as opposite ends of a single dimension is now standard procedure in most sex research laboratories.

Depression and anxiety were assessed using the Beck Depression Inventory and Beck Anxiety Inventory, respectively, and subjects were screened for major mood disorders, anxiety disorders, and psychiatric disorders using the screening section of the Structured Clinical Interview for Axis I DSM-IV Disorders – Patient Edition (SCID; First, Spitzer, Gibbon, & Williams, 1994). In addition, dysfunctional subjects were asked the diagnostic questions from the depression section of the SCID. Subjects meeting criteria for a major affective disorder were excluded from the study. However, as appropriate, a standard physiological evaluation was still conducted.

Procedure for Physiological Assessment

1. Feedback Groups. When the subject was ready for the physiological assessment, the experimenter who interviewed the person began by re-explaining the procedure to him. The subjects randomly assigned to the experimental feedback groups (negative, neutral, and inflated) were told they would view a series of 5-minute erotic videotape segments while their erections and heart rates are measured. They were told about the erection score and explained that they would predict their erection score prior to viewing the second film. They would not see the erection score during the first film but would be shown their score on the monitor during subsequent films. See Appendix M for the exact wording provided to the subjects.

2. No-feedback Group. Subjects randomly assigned to the control (no-feedback) group were told they would view a series of 5-minute erotic videotape segments while their erections and heart rates are measured. They would predict their erection size and rate their confidence

prior to each film but would not be shown an erection score. See Appendix M for the exact wording provided to the subjects.

The subject was then escorted to the sound attenuated chamber where he was instructed how to measure the circumference of the mid-shaft of his penis with a paper strip. The experimenter left the room while the subject disrobed from the waist down and took this measurement. The subject was instructed to call the experimenter, who was in the adjacent control room, via an intercom when he was ready and had his clothes back on. The experimenter returned and asked the subject to remove his shirt so that electrodes could be attached to his chest for heart rate measurement. The subject then sat on the paper-covered recliner while a technician attached the 7 electrodes. Meanwhile, the experimenter returned to the control room with the strip of paper used to measure the subject's flaccid penis. He measured the distance of the penile circumference in mm with a ruler and selected a mercury-in-rubber strain gauge that was at least 5-10mm smaller than the flaccid circumference. The experimenter calibrated the polygraph to the strain gauge using a calibration cone. He returned to the sound chamber and provided the subject with the strain gauge. The subject was instructed how to attach the strain gauge around the mid-shaft of his penis. The experimenter left the room while the subject disrobed from the waist down, attached the strain gauge, and sat on the paper-covered reclining chair. The experimenter returned to visually check to make sure the device was properly attached (i.e., around the mid-shaft of the penis and without twists) and placed a sheet of paper across the subject's lap to prevent him from seeing or touching his penis. If the strain gauge was not properly in place, the experimenter re-explained how to place the device and asked the subject to adjust it correctly. Once the gauge was in place, the subject completed the Erection Prediction Questionnaire on a clipboard. The subject was then told that an erotic videotape would begin on the monitor and

continue for five minutes. He was instructed to imagine himself involved in the activity which he sees and was asked not to move the paper covering his lap or touch his genitals. After asking if he had any questions, the lights were dimmed and the experimenter left the room. The experimenter operated the equipment (polygraph and VCR) from the adjacent control room and monitored the subject via intercom. Penile circumference was measured on polygraph chart paper during the five minute erotic videotape.

Following the first film offset, the experimenter returned to the assessment room and raised the lights. He handed the subject a pencil and clipboard containing the Sexual Arousal Questionnaire. The experimenter then handed the subject assigned to an experimental group an Erection Score Prediction Questionnaire and told the subject "In a few minutes you will view another sexually explicit videotape for five minutes while we measure your sexual responding. Only this time we will show you in the corner of the video screen your "real time" erection score. Remember, your erection score is based on a number of factors including size, rigidity, temperature, and blood flow. An average erection score for a man watching a similar erotic videotape is 12. Possible scores range from 0 to 24. Write down on the Erection Score Prediction Questionnaire the maximum score you think you can achieve when you watch the next videotape and mark the level of confidence you have in that prediction and the maximum size erection you think you will achieve." Control subjects were told "In a few minutes you will view another sexually explicit videotape while we collect the same measurements for five minutes." All subjects were reminded to imagine being involved in the activities in the film and not to touch themselves. All subjects were asked to complete a questionnaire asking them to rate on a visual analog scale the maximum size erection they thought they could achieve during the film they were about to watch and how confident they were in that prediction. The experimenter asked the

subject if he had any questions and after answering them, dimmed the lights and returned to the control room.

After the subject's penile circumference returned to baseline flaccidity, the second erotic videotape was started on the VCR. If the readout from the genital measure did not return to baseline levels, a return-to-baseline procedure was employed to bring the subject to his basal level. This strategy consisted of asking the subject to count backward by 7s from 100. However, this procedure was rarely necessary given that the subject spent 5-10 minutes completing questionnaires between films.

While the videotape was played, an erection score was displayed for the experimental subjects. Each subject in a feedback group started out with an erection score of 0 and the number increased with incremental increases in penile circumference:

1. Negative Feedback Group. When the subjects in the negative feedback group reached their maximum erection (based on the previous film) they were given the feedback via the meter that they were achieving a score 6 points less than their predicted score. The erection scores were only even numbers, given the limited range of stored memory on the video display apparatus. Because it was determined during a pilot study that most men reached maximum erection during the second film within 1 minute of when they reached it during the first film, subjects who did not reach maximum erection during the second film were shown their maximum score one minute after the point they reached maximum erection during the previous film.

2. Neutral Feedback Group. When the subjects in the neutral feedback group reached their maximum erection, they were given the feedback that they were at the level they predicted. The erection scores were only even numbers, given the limited range of stored memory on the video display apparatus. Subjects who do not reach maximum erection during the second film

were shown their predicted erection score one minute after the point they reached maximum erection during the previous film.

3. Positive Feedback Group. When the subjects in the inflated feedback group reached their maximum erection, their meters reflected scores 4 points higher than they predicted. The erection scores were only even numbers, given the limited range of stored memory on the video display apparatus. Subjects who did not reach maximum erection during the second film were shown their predicted erection score plus 4 points one minute after the point they reached maximum erection during the previous film.

Following the second film offset, the experimenter returned to the sound chamber, raised the lights, and handed the control (no-feedback) subject a Sexual Arousal Questionnaire. Experimental groups received the Sexual Arousal and Feedback Questionnaire.

The experimenter then handed the subject assigned to a feedback group an Erection Score Prediction Questionnaire and told the subject "In a few minutes you will view another sexually explicit videotape for five minutes while we measure your sexual responding. Again we will show you in the corner of the video screen your "real time" erection score. Remember, your erection score is based on a number of factors including size, rigidity, temperature, and blood flow. An average erection score for a man watching an erotic videotape is 12 and possible scores range from 0 to 24. Write down on the Erection Score Prediction Questionnaire the maximum score you think you can achieve when you watch the next videotape and mark the level of confidence you have in that prediction and the maximum size erection you think you will achieve." No-feedback subjects completed an Erection Prediction Questionnaire asking them to rate on visual analog scales the maximum size erection they though they could achieve during the next film and how confident they were in that prediction. After all subjects accomplished their

respective prediction questionnaires, they were told there were no more films or measurements and were instructed to remove the strain gauge and Holter monitor electrodes and get dressed while the experimenter was out of the room.

Debriefing Session

When the subject was dressed he completed a Film Quiz. The subject was then debriefed by the same experimenter who collected his physiological data. During the debriefing he was told the purpose of the study and the subjects in the experimental groups were informed that they were given false feedback and explained why.

Dysfunctional subjects were explained how their performance in the lab related to their dysfunction and how treatment makes use of this information.

Functional subjects were debriefed based on the following possible scenarios:

1. Increase in tumescence: Subjects were told that receiving false feedback resulted in an increase in tumescence because they had the skills and confidence to make adaptations to overcome discrepancies. This is what the study predicted. Discrepancies were not expected to impact the confidence and expectancies of sexually functional men concerning their ability to maintain erections.

2. No change in tumescence: Subjects were told that receiving false feedback had no impact on their tumescence because they had the skills and confidence to make adaptations to overcome discrepancies. This is what the study predicted. Discrepancies were not expected to impact the confidence and expectancies of sexually functional men concerning their ability to maintain erections.

3. Decrease in tumescence: Subjects were told that receiving false feedback resulted in a decrease in tumescence because when they were shown that they were less aroused than they

thought they were, they downwardly adjusted their confidence and outcome expectancy. They probably identified a reason for the discrepancy, such as being tired, uncomfortable in the lab, distracted, or not interested in the film. They were informed that this is not an uncommon normal experience and they were asked to give examples of similar occurrences in the past. The subjects were told that no permanent or lasting effects were expected. It was pointed out that they overcame past discrepancies between expected and actual arousal. It was further emphasized that the situation was not an actual sexual situation because they only viewed a film. Many normally functioning men were unable to get fully aroused while viewing the movies. For most men, the conditions have to be right for full sexual arousal. Finally, it was explained to the subjects that they responded exactly in the manner we tried to make them respond. Their response to receiving discrepant information about arousal was to disengage from the process – a perfectly normal response.

Following debriefing, the experimenter paid the subject and explained to the dysfunctional subject that a report would be sent to his referral source (if desired). When appropriate, dysfunctional subjects were offered treatment by us free of charge.

The re-useable mercury-in-rubber strain gauges were sterilized after each use by immersing them in Cidex activated dialdehyde solution for 10 minutes, followed by 3 rinsings in clean water, in accordance with manufacturer recommendations (Johnson & Johnson, 1994). The disposable paper items were disposed of.

Apparatus

The physiological assessment was conducted in a 7' x 10' sound attenuated chamber at USUHS (in room B1004). The only objects in the room were a plastic upholstered recliner chair, a 27" television on a stand placed 5' in front of the recliner, a chair and table for the interviewer,

a stand setting next to the recliner on which sat a wireless intercom (turned on in "hands free" mode; the other intercom was in the adjacent control room), and a white noise generator (which was turned on during the assessment to reduce outside noises). The walls and ceiling were painted white and the carpet was brown. The walls were bare in order to minimize distractions. In the wall behind the recliner was a 2' x 3' two-way mirror, through which the interviewer could observe the back of the subject and the television monitor from the adjoining control room.

The mercury-in-rubber strain gauge was attached to a lead which passed through a hole in the wall beneath the mirror and into the polygraph in the control room. The television in the sound chamber was attached to a VCR in the control room (the cable connecting them passed through the hole in the wall). Erection scores were displayed as a 5" white number in the lower right corner of the television screen. The scores were generated by a Sima Screenwriter Video Movie Character Generator in the control room which received a signal from the VCR playing the erotic videotape. The character generator then passed the signal to a second VCR in the control room, which was connected to the television in the sound room. The experimenter in the control room displayed the erection score by selecting numbers stored in the video display device (12 numbers were stored, even numbers 0 through 22).

Heart rate was measured with a portable Marquette Holter monitor. Seven electrodes were attached to the subject's chest and the signals were transmitted through leads to the 3" x 6" Holter monitor. The information was recorded onto an audio cassette tape in the monitor. The monitor set on the table next to the recliner in the sound chamber.

Stimulus Materials

Two five-minute erotic videotape segments containing similar sexual activity (foreplay and intercourse) were shown. The films were matched in similarity, including length of film, to

those used in other studies of male sexual arousal (e.g., Abrahamson, et al., 1985; Barlow, Sakheim & Beck, 1983; Beck, et al., 1987; Cranston-Cuebas, et al., 1993; and Jones, Bruce & Barlow, 1986). They depicted adults engaging in consensual heterosexual sex and did not contain any violence. One film segment was shown during the first measurement session and the other was shown during the second measurement session. A pilot study with 10 male subjects indicated no difference between the two films in self-reported arousal [Film 1 mean = 74.90 mm (SD = 43.92), Film 2 mean = 76.30 mm (SD = 43.81), $p > .10$] or self-reported size of erection [Film 1 mean = 60.00 mm (SD = 44.58), Film 2 mean = 64.10 mm (SD = 48.33), $p > .10$].

Data Sampling and Analysis

Initial group comparisons were made on demographic variables to insure there were no differences (other than in sexual functioning) between the functional and dysfunctional groups. Similar comparisons were made to insure there were no demographic differences among the 4 feedback groups. Analysis of variance (ANOVA)/t-tests and chi-squares were used for these analyses. Five major sets of analyses were conducted corresponding to the four major study hypotheses. The general analytic model is described below. Analyses of variance/covariance were followed up with planned comparisons.

Analysis One: ***Effect of feedback on tumescence.*** To facilitate data analysis, each participant's raw data expressed in changes in millimeters of penile tumescence was reduced to the mean millimeters of change by subtracting the first second of penile response from subsequent seconds for each film. Penile responses for each participant were divided into 50 time segments/epochs of 6 seconds for each film. The time segments/epochs were then collapsed into one overall mean for each participant. Paired-sample t-tests were conducted to examine mean tumescence changes from Film 1 to Film 2 for each feedback condition within each group. In

addition, one-way ANOVAs were conducted for each group with the mean tumescence change during Film 2 as the dependent variable and feedback as the independent variable. Comparisons were made to examine differences among functionals and dysfunctionals in tumescence during Film 2 for each feedback condition. It was expected that feedback would have the following effects for the dysfunctional group: negative feedback would result in decreased tumescence (e.g., 7mm during Film 2), positive feedback would result in increased tumescence (e.g., 17mm during Film 2), and neutral and no-feedback would result in no change in tumescence (e.g., 12mm during Film 2). It was expected that feedback would have the following effects for the functional group: negative feedback would result in very large tumescence (e.g., 25mm), and positive, neutral, and no-feedback would result in large tumescence (e.g., 20mm).

Analysis Two: ***Effect of feedback on predicted erection scores and erection size.*** To examine the effect of feedback condition on expectancy ratings, paired-sample t-tests were conducted to examine changes in predicted erection score prior to Film 2 and imaginary Film 3 for each feedback condition within each group. In addition, a 2 (Group) X 3 (Feedback) ANCOVA was conducted, covarying predicted erection score (0 – 24) made prior to Film 2. The dependent variable was predicted erection score made following Film 2 (prior to the imaginary Film 3). Comparisons were made to examine differences between functionals and dysfunctionals in predicted erection scores made prior to imaginary Film 3 for each feedback condition. It was expected that feedback would have the following effects for the dysfunctional group: negative feedback would result in decreased predicted erection scores (e.g., 4), positive feedback would result in increased predicted erection scores (e.g., 12), and neutral feedback and would result in no change in predicted erection scores (e.g., 8). It was expected that feedback would have the following effects for the functional group: negative feedback would result in no change in

predicted erection scores (e.g., 12), positive feedback would result in increased erection scores (e.g., 16), and neutral feedback would result in no change in predicted erection scores (e.g., 12).

To further examine the effect of feedback condition on expectancy ratings, paired-sample t-tests were conducted to examine changes in predicted size of erection prior to Film 2 and imaginary Film 3. In addition, a 2 (Group) X 4 (Feedback) ANCOVA was conducted, covarying predicted erection size rating (0 – 150) made prior to Film 2. The dependent variable was predicted erection size rating made following Film 2 (prior to the imaginary Film 3). Comparisons were made to examine differences between functionals and dysfunctionals in predicted erection size ratings made prior to imaginary Film 3 for each feedback condition. It was expected that feedback would have the following effects for the dysfunctional group: negative feedback would result in decreased predicted erection size (e.g., 40), positive feedback would result in increased predicted erection size (e.g., 100), and neutral and no-feedback would result in no changes in predicted erection size (e.g., 70). It was expected that feedback would have the following effects for the functional group: negative feedback would result in no change in predicted erection size (e.g., 100), positive feedback would result in increased predicted erection size (e.g., 120), and neutral and no-feedback would result in no change in predicted erection size (e.g., 100).

Analysis Three: ***Effect of feedback on confidence in predicted erection scores and erection size.*** To examine the effect of feedback condition on confidence ratings, paired-sample t-tests were conducted to examine changes in confidence ratings made prior to Film 2 and imaginary Film 3 for each feedback condition within each group. In addition, a 2 (Group) X 4 (Feedback) ANCOVA was conducted, covarying predicted confidence ratings made prior to Film 2. The dependent variable was predicted confidence ratings made following Film 2 (prior to the

imaginary Film 3). Comparisons were made to examine differences between functionals and dysfunctionals in predicted confidence ratings made prior to imaginary Film 3 for each feedback condition. It was expected that feedback would have the following effects for the dysfunctional group: negative feedback would result in decreased confidence ratings (e.g., 30), positive feedback would result in increased confidence ratings (e.g., 60), and neutral and no-feedback would result in no change in confidence ratings (e.g., 50). It was expected that feedback would have the following effects for the functional group: negative feedback would result in substantially increased confidence ratings (e.g., 100), positive feedback would result in moderately increased confidence ratings (e.g., 90), and neutral and no-feedback would result in no change in confidence ratings (e.g., 80).

Analysis Four: ***Effect of feedback on subjective responses during film.*** Two questionnaires (Sexual Arousal Questionnaire and Sexual Arousal and Feedback Questionnaire) were designed to measure a number of subjective experiences while viewing the films by the subjects. Immediately following Film 1, all the subjects rated their responses on 10 visual analog scales (Sexual Arousal Questionnaire). After viewing Film 2, the no-feedback subjects again completed the Sexual Arousal Questionnaire and the feedback subjects completed the same 10 visual analog scales in addition to 11 scales asking about their experiences related to receiving the erection score (Sexual Arousal and Feedback Questionnaire). To examine the effect of feedback condition on subjective responses, paired-sample t-tests were conducted to examine changes in responses from Film 1 to Film 2 for each feedback condition within each group. In addition, a 2 (Group) X 4 (Feedback) ANCOVA was conducted, covarying subjective ratings made following Film 1. The dependent variable was subjective ratings made following Film 2. Comparisons

were made to examine differences between functionals and dysfunctionals in subjective ratings made after Film 2 for each feedback condition.

For the dysfunctional subjects, the following cognitive domains were expected to *decrease* as a result of negative feedback: arousal, confidence during the film, perceived size of erection, attention to the film, control over erection, arousal caused by the erection score, confidence resulting from the erection score, ability to maintain erection resulting from the erection score, attention to the film resulting from the erection score, control over erection caused by the erection score, perceived accuracy of the erection score, and control over the erection score. Likewise, the following cognitive domains were expected to *increase* as a result of negative feedback: anxiety, attention to the subject's body, negative-type thinking, thought interference, distraction caused by the erection score, anxiety resulting from the erection score, attention to the subject's body resulting from the erection score, and surprise about the erection score. The opposite results were expected for both dysfunctional subjects receiving positive feedback and for functional subjects receiving negative feedback. There was no change expected between Film 1 and Film 2 among these cognitive domains for functional subjects who receive positive feedback.

Analysis Five: ***Effect of feedback on attention to film.*** The Film Quiz was designed to measure the subjects' attention to the erotic stimulus (Film 2). These scores were correlated to subjects' overall tumescence during Film 2. It was expected that Film Quiz scores would be significantly correlated with tumescence, supporting the hypothesis that functional performance is associated with attention to erotica and dysfunctional performance is associated with disengagement.

Sample Size and Power Considerations

Based on the literature comparing functional and dysfunctional tumescence, a large effect size was selected. A determination of sample size was conducted for a 2 X 4 ANCOVA based on the following parameters: alpha = .05, a large effect size of 0.40, and a minimum power of 0.80. A total sample size of at least 80 (40 functionals and 40 dysfunctionals) was determined to be sufficient (see Table 9).

Part V: Results

Demographics: A 2 x 4 group by feedback-condition ANOVA was conducted for age and education. There were no significant main effects or interactions. In addition, chi-square analyses revealed no racial differences.

Data Reduction: To facilitate data analysis, each participant's raw data, expressed in changes in millimeters of penile tumescence, was reduced to the mean millimeters of change. The first epoch of penile response was subtracted from subsequent epochs for each film. For each five minute film, penile responses for each participant were divided into 50 time segments/epochs of 6 seconds. The epochs were then collapsed into an overall mean for each participant.

Analysis One: ***Effect of feedback on tumescence.***

Dysfunctionals and Functionals. A repeated measures ANOVA was conducted with the mean tumescence change as the dependent variable, time (Film 1 vs. Film 2) as the within-group variable, and group and feedback as the between-group variables. This analysis revealed a significant effect for time [$F(1, 105) = 8.89$, $p < .01$]. As expected, this analysis also revealed a significant group effect [$F(1, 105) = 7.45$, $p < .01$] and a significant film x feedback x group interaction [$F(3, 105) = 2.77$, $p < .05$]. Also, consistent with previous research and as expected in this study, a one-way ANOVA with tumescence change during Film 1 as the dependent variable and group (dysfunctional and functional) as the independent variables revealed that, before the manipulation (during Film 1), there was a significant difference in mean tumescence (collapsed across the four feedback conditions) between the dysfunctional subjects ($M = 6.15$ mm, $SD = 6.96$) and functional subjects [$M = 9.96$ mm, $SD = 8.20$; $F(1, 111) = 7.12$, $p < .01$]. The dysfunctional subjects achieved smaller baseline erections than the functional subjects.

Dysfunctionals. A one-way ANOVA was conducted with the mean tumescence change during Film 1 as the dependent variable and feedback as the independent variable. Comparisons were made to examine baseline differences among the dysfunctionals for each feedback condition. As expected, there were no significant differences in mean tumescence [$\underline{F}$ (3, 53) = .009, $\underline{p} > .10$].

For each feedback condition, paired-sample t-tests were conducted to examine changes in tumescence from Film 1 to Film 2. Presented in Figure 13 are the dysfunctionals' mean tumescence for Film 1 and Film 2 by feedback condition. Contrary to expectations, negative feedback did not significantly change tumescence from Film 1 ($\underline{M}$ = 6.15 mm, $\underline{SD}$ = 8.42) to Film 2 [$\underline{M}$ = 5.52 mm, $\underline{SD}$ = 6.59; $\underline{t}$ (13) = .587, $\underline{p} > .10$]. Surprisingly, neutral feedback decreased tumescence from Film 1 ($\underline{M}$ = 5.98 mm, $\underline{SD}$ = 6.26) to Film 2 [$\underline{M}$ = 3.47 mm, $\underline{SD}$ = 2.78; $\underline{t}$ (13) = 2.16, $\underline{p} < .05$]. Also contrary to expectations, positive feedback decreased tumescence from Film 1 ($\underline{M}$ = 6.05 mm, $\underline{SD}$ = 7.31) to Film 2 [$\underline{M}$ = 3.82 mm, $\underline{SD}$ = 5.52; $\underline{t}$ (13) = 2.64, $\underline{p} < .05$]. As expected, no-feedback did not impact tumescence [Film 1: $\underline{M}$ = 6.39 mm, $\underline{SD}$ = 6.46, vs. Film 2: $\underline{M}$ = 7.57 mm, $\underline{SD}$ = 8.15; $\underline{t}$ (14) = 1.52, $\underline{p} > .10$].

Functionals. A one-way ANOVA was conducted with the mean tumescence change during Film 1 as the dependent variable and feedback as the independent variable. Comparisons were made to examine baseline differences among the functionals for each feedback condition. As expected, there was no significant difference in mean tumescence [$\underline{F}$(3, 52) = .002, $\underline{p} > .10$].

For each feedback condition, paired-sample t-tests were conducted to examine changes in tumescence from Film 1 to Film 2. Presented in Figure 15 are the functionals' mean tumescence for Film 1 and Film 2 by the feedback conditions. Unexpectedly, negative feedback significantly decreased tumescence from Film 1 ($\underline{M}$ = 9.98 mm, $\underline{SD}$ = 6.81) to Film 2 [$\underline{M}$ = 6.98 mm, $\underline{SD}$ =

5.74; t (12) = 2.61, $p < .05$]. As predicted, neutral feedback did not decrease tumescence from Film 1 (M = 9.85 mm, SD = 8.89) to Film 2 [M = 10.58 mm, SD = 10.19; t (12) = .473, $p > .10$]. Contrary to the study's hypothesis, positive feedback decreased tumescence from Film 1 (M = 10.09 mm, SD = 9.07) to Film 2 [M = 8.22 mm, SD = 6.95; t (15) = 2.25, $p < .05$]. As expected, no-feedback did not change tumescence [Film 1: M = 9.90 mm, SD = 8.60, vs. Film 2: M = 7.94 mm, SD = 6.01; t (13) = .971, $p > .10$].

Additional Analyses. For each feedback condition, the mean changes in penile circumference by epoch were plotted by group. These graphs are presented for the dysfunctionals and functionals, respectively, in Figures 14 and 16. Based on visual inspection of these figures, other variables were selected for analysis: maximum change in tumescence, time to reach maximum tumescence, slope from start of film to maximum tumescence, average slope during duration of film, and tumescence change at the end of the film. These variables were selected to examine differences in maximum tumescence (maximum change in tumescence, time to reach maximum tumescence), to examine differences in the rate of change in tumescence (slope from start of film to maximum tumescence, average slope during duration of film), and to examine tumescence at the films' end. Repeated measures ANOVAs were conducted with the additional dependent measures. Time (Film 1 vs. Film 2) was the within-group variable and group and feedback were the between-group variables.

Maximum tumescence. For maximum tumescence, there was a statistical trend for time [F(1, 105) = 3.04, p = .08] and a significant group effect [F(1, 105) = 6.37, $p < .05$]. For the dysfunctionals, follow-up comparisons revealed a trend for maximum tumescence to decrease across films during neutral feedback [Film 1: M = 11.21 mm, SD = 10.82, vs. Film 2: M = 7.29 mm, SD = 5.76; t (13) = 1.92, p = .08] and positive feedback [Film 1: M = 10.79 mm, SD = 9.21,

vs. Film 2: M = 8.36 mm, SD = 10.31; t (13) = 1.85, p = .09]. For the functionals, there was a significant decrease in maximum tumescence for negative feedback [Film 1: M = 17.08 mm, SD = 9.21, vs. Film 2: M = 13.31 mm, SD = 8.22; t (12) = 2.23, p < .05]. There were no other significant changes in maximum tumescence over time (all p's > .05) or differences among feedback conditions (all p's > .05).

Time to maximum tumescence. For time to reach maximum tumescence, there was a statistical trend for time [F(1, 105) = 3.31, p = .07] and a significant group effect [F(1, 105) = 5.81, p < .05]. For the dysfunctionals, follow-up comparisons revealed a significant increase in time to reach maximum tumescence during positive feedback [Film 1: M = 151 sec, SD = 88.9, vs. Film 2: M = 210 sec, SD = 81.5; t (15) = 2.35, p < .05]. For the dysfunctionals, there was a trend for increased latency during no-feedback (M = 221 sec, SD = 77.5) compared to positive feedback [M = 164 sec, SD = 95.7; t (53) = 2.00, p = .05]. Examining Figures 14 and 16, it appears that tumescence levels were on a downward trend at the end of Film 2 for all conditions except no-feedback, where tumescence leveled off or was actually increasing at the end of the film. This suggests that feedback may impact the ability of men to both obtain and sustain erections. Perhaps not receiving feedback results in erections that are more likely to be sustained. This has potential treatment implications that will be discussed in the discussion section. There were no other significant changes in latency to reach maximum tumescence over time (all p's > .05) or differences among feedback conditions (all p's > .05).

Rate of change in tumescence. For slope to maximum tumescence, there was a significant time effect [F(1, 105) = 7.39, p < .01] and a significant group effect [F(1, 105) = 5.56, p < .05]. For dysfunctionals, follow-up comparisons revealed a significant decrease in slope during neutral feedback [Film 1: B_{YX} = .0986, SD = .118, vs. Film 2: B_{YX} = .0368, SD = .027; t

(13) = 2.34, $p < .05$]. For functionals, there was a significant decrease in slope during negative feedback [Film 1: $B_{YX} = .1546$, SD = .1256, vs. Film 2: $B_{YX} = .1038$, SD = .0854; t (12) = 2.27, $p < .05$] and during positive feedback [Film 1: $B_{YX} = .1347$, SD = .1130, vs. Film 2: $B_{YX} = .0756$, SD = .0556; t (15) = 3.12, $p < .01$]. There were no other significant changes in slope over time (all p's > .05) or differences among feedback conditions (all p's > .05).

There were no significant main effects or interactions for the average slope during the duration of the films nor tumescence change at the end of the films (all p's > .05).

Analysis Two: ***Effect of feedback on predicted erection scores and erection size.***

Dysfunctionals and Functionals. A repeated measures ANOVA was conducted with the predicted erection scores made prior to Film 2 and (imaginary) Film 3 examined within-group (time) and group and feedback as the between-group variables. As hypothesized, there was a significant group effect [$F(1, 78) = 8.10$, $p < .01$] and a significant film x feedback interaction [$F(2, 78) = 63.79$, $p < .001$]. These results suggest that both the dysfunctional and functional subjects believed the false feedback. That is, subjects changed their predicted scores based on which group they belonged to and the type of feedback they received.

A repeated measures ANOVA was also conducted with predicted erection size ratings prior to Film 2 and (imaginary) Film 3 examined over time with group and feedback as the between-group variables. As expected, there was a significant group effect [$F(1, 94) = 9.93$, $p < .01$], a significant film effect [$F(1, 94) = 9.94$, $p < .01$], and a significant film x feedback interaction [$F(3, 94) = 3.27$, $p < .05$]. These results further suggest that both the dysfunctional and functional subjects believed the false feedback.

A one-way ANOVA was used to compare predicted erection score prior to Film 2 by group. As expected, the dysfunctionals predicted smaller scores than the functionals [M = 7.67 mm, SD = 4.08, vs. M = 10.57 mm, SD = 4.90; F(1, 82) = 8.71, p < .01].

A one-way ANOVA was used to compare predicted erection size prior to Film 2 by group. As expected, the dysfunctionals predicted smaller size than the functionals [M = 59.34 mm, SD = 41.45, vs. M = 82.41 mm, SD = 41.45; F(1, 107) = 8.39, p < .01; see Table 10].

Dysfunctionals. To examine the effect of feedback condition on outcome expectancy, within-group, paired-sample t-tests were conducted to examine changes in predicted erection score from Film 2 to Film 3 for each feedback condition (see Table 10). As predicted, negative feedback resulted in a significant decrease in prediction for the dysfunctional subjects [Film 2: M = 7.71, SD = 3.71, vs. Film 3: M = 4.21, SD = 3.19; t (13) = 6.02, p < .001] and positive feedback resulted in a significant increase [Film 2: M = 6.36, SD = 4.16, vs. Film 3: M = 9.00, SD = 4.93; t (13) = 3.29, p < .01]. Also consistent with the study's hypothesis, neutral feedback resulted in no change in predicted erection score. Importantly, though the neutral and positive feedback subjects experienced decreased tumescence from Film 1 to Film 2, their erection score predictions followed the false feedback they received. These results suggest that the dysfunctional subjects believed the feedback they received, despite their actual performance.

Controlling for the initial erection score prediction (prior to Film 2), a one-way ANCOVA revealed a significant main effect for feedback: negative (M = 4.17, SE = .60), neutral (M = 8.15, SE = .61), and positive [M = 10.18, SE = .61; F(2, 38) = 25.72, p < .001]. These results further support the conclusion that the dysfunctional subjects believed the false feedback, despite their actual performance. The group means by feedback condition are presented in Table 11.

To further examine the effect of feedback condition on outcome expectancy, within-group, paired-sample t-tests were conducted to examine changes in predicted erection size from Film 2 to Film 3 for each feedback condition (see Table 10). Unexpectedly, no-feedback resulted in a significant decrease in predicted size for the dysfunctionals [Film 2: $\underline{M} = 53.09$ mm, $\underline{SD} = 35.90$, vs. Film 3: $\underline{M} = 29.25$ mm, $\underline{SD} = 43.93$; $\underline{t}\,(13) = 2.53$, $\underline{p} < .05$]. This is inconsistent with the tumescence results, given that there was no change in tumescence from Film 1 to Film 2. It is unclear what information the subjects used to base their decrease in predicted erection size. Though it is noteworthy that the dysfunctional feedback group that had the greatest tumescence during Film 2 (no-feedback) also had the lowest expected erection size (not statistically significant). Also unexpected, the negative and positive feedback conditions did not result in changes in predicted erection size despite the negative and positive feedback resulting in the expected changes in erection score predictions. A possible explanation for this discrepancy is that the dysfunctional subjects were more likely to believe the false erection scores because they were told they were based not only on erection size but also pulse, temperature, hardness, and blood flow. The dysfunctional subjects may have had a hard time believing that the size of their erections would be anything other than what they expected. In actuality, they were partially correct in their assumptions because their tumescence did not change with negative feedback and it actually decreased with positive feedback. Their tumescence was inconsistent with their erection scores and they may have accounted for this discrepancy by taking into account the other variables supposedly factored into the erection scores. Support for this conclusion can be found in the fact that the dysfunctional subjects did not report a change in the size of their erections from Film 1 to Film 2 on the Sexual Arousal and Feedback Questionnaire and there were no

significant differences in reported erection size among the four feedback conditions during Film 2, the results of which are presented later.

Functionals. To examine the effect of feedback condition on outcome expectancy for the functional subjects, paired-sample t-tests were conducted to examine changes in predicted erection score made from Film 2 to Film 3 for each feedback condition (see Table 10). These results were similar to those of the dysfunctional subjects. Contrary to expectations, negative feedback resulted in a significant decrease in predicted score [Film 2: $\underline{M}$ = 12.31, $\underline{SD}$ = 3.28, vs. Film 3: $\underline{M}$ = 8.15, $\underline{SD}$ = 4.14; $\underline{t}$ (12) = 6.04, $\underline{p} < .001$]. Interestingly, this is consistent with the decreased tumescence. As expected, positive feedback resulted in a significant increase in predicted erection score [Film 2: $\underline{M}$ = 10.63, $\underline{SD}$ = 4.76, vs. Film 3: $\underline{M}$ = 12.69, $\underline{SD}$ = 4.03; $\underline{t}$ (15) = 4.66, $\underline{p} < .001$] and neutral feedback resulted in no change. Although positive feedback decreased tumescence, predicted erection score was similar to the false feedback. As with the dysfunctional subjects, these results suggest that the functional subjects believed the feedback they received, despite their actual performance.

Controlling for erection score prediction made prior to Film 2, a one-way ANCOVA revealed a significant main effect for feedback: negative ($\underline{M}$ = 6.57, $\underline{SE}$ = .537), neutral ($\underline{M}$ = 10.87, $\underline{SE}$ = .538), and positive [$\underline{M}$ = 12.64, $\underline{SE}$ = .474; $\underline{F}(2, 38) = 36.54$, $\underline{p} < .001$]. These results further support the conclusion that the functional subjects believed the false feedback, despite their actual performance. The group means by feedback condition are presented in Table 11.

To further examine the effect of feedback condition on outcome expectancy, within-group, paired-sample t-tests were conducted to examine changes in predicted erection size for each feedback condition (see Table 10). Contrary to the study's hypothesis, but consistent with the erection score prediction and tumescence, negative feedback resulted in decreased predicted

erection size for the functional subjects [Film 2: M = 99.92 mm, SD = 31.86, vs. Film 3: M = 71.15 mm, SD = 30.18; t (12) = 4.64, p < .001; see Table 10]. During negative feedback, the functionals' predicted erection size decreased, suggesting they both believed the feedback and accurately described their decreased tumescence. Also unpredicted, positive feedback did not increase predicted erection size. This is inconsistent with the subjects' self-perception, given that during positive feedback, functional subjects reported an increase in size while experiencing an actual decrease in tumescence. As expected, neutral feedback and no-feedback did not impact predicted erection size. This is consistent with the absence of changes in tumescence and predicted erection size. In summary, the functional subjects accurately described what was happening during negative, neutral and no-feedback but not during positive feedback. Perhaps functional men are not used to receiving inflated feedback about their sexual performance and when they do receive it, they do not know how to process it. Thus, these findings suggest that cognitive "surprise" may result in decreased tumescence.

An ANCOVA, covarying the Film 2 erection size prediction, revealed that after receiving feedback, the negative feedback group predicted a significantly smaller erection (M = 57.50 mm, SE = 5.62) than subjects in the neutral feedback group [M = 78.57 mm, SE = 5.57; MD = 21.07, SE = 8.04, p < .05]; positive feedback group [M = 85.11 mm, SE = 4.96; MD = 27.60, SE = 7.50, p < .001]; and no-feedback group [M = 76.95 mm, SE = 5.30; MD = 19.45, SE = 7.77, p < .05]. The group means by feedback condition are presented in Table 11. These results are consistent with the finding that only negative feedback caused the functional subjects to alter their predictions for erection size.

Analysis Three: ***Effect of feedback on confidence in predicted erection scores and erection size.***

Dysfunctionals and Functionals. A repeated measures ANOVA was conducted with combined confidence in the erection score and erection size made prior to Film 2 and (imaginary) Film 3 compared over time, with group and feedback as the between-group variables. As hypothesized, this analysis revealed a significant group main effect [$\underline{F}(1, 94) = 9.14$, $\underline{p} < .01$] and a trend toward a significant film x feedback interaction effect [$\underline{F}(3, 94) = 2.55$, $\underline{p} = .06$].

Also as expected, a one-way ANOVA with the confidence rating made prior to Film 2 as the dependent variable and group as the independent variable revealed a significant difference in mean confidence rating (collapsed across the four feedback conditions) between the dysfunctional subjects ($\underline{M} = 62.60$ mm, $\underline{SD} = 34.64$) and functional subjects [$\underline{M} = 82.77$ mm, $\underline{SD} = 35.05$; $\underline{F}(1, 107) = 9.12$, $\underline{p} < .01$]. The dysfunctional subjects had less confidence in their baseline predictions than the functional subjects.

Dysfunctionals. For the dysfunctionals, within-group, paired-sample t-tests were conducted to examine changes in confidence ratings over time (prior to films 2 and 3) by feedback condition (see Table 10). As predicted, positive feedback resulted in a significant increase in confidence [Film 2: $\underline{M} = 47.86$ mm, $\underline{SD} = 29.73$, vs. Film 3: $\underline{M} = 65.50$ mm, $\underline{SD} = 37.22$; $\underline{t}(13) = 2.38$, $\underline{p} < .05$]. This increase following positive feedback is inconsistent with the tumescence data, given that tumescence actually decreased as a result of positive feedback. Contrary to expectations, negative feedback did not result in decreased confidence. This may explain why negative feedback resulted in no change in tumescence from Film 1 to Film 2. Consistent with the study's hypotheses, neutral feedback and no-feedback did not change confidence ratings from pre-Film 2 to pre-Film 3. However, the lack of change for the dysfunctionals is inconsistent with the tumescence results, given the decrease in tumescence in

the neutral feedback condition. This suggests that there is a different mechanism by which tumescence decreases for dysfunctional men.

Functionals. For the functionals, within-group, paired-sample t-tests were conducted to examine changes in confidence over time and by feedback condition (see Table 10). As predicted, positive feedback significantly increased confidence [Film 2: M = 73.94 mm, SD = 38.12, vs. Film 3: M = 89.56 mm, SD = 32.06; t (15) = 3.29, p < .01]. This is inconsistent with the decreased tumescence findings. Unexpectedly, negative feedback did not decrease confidence, despite the fact that tumescence decreased in the negative feedback condition. Consistent with the study's hypotheses, neutral feedback and no-feedback did not result in changes in confidence. This is consistent with the lack of changes in tumescence for neutral feedback and no-feedback. An ANCOVA, covarying the Film 2 predicted confidence level, revealed that after receiving feedback there was a trend for the positive feedback group to have more confidence in their predictions (M = 95.90 mm, SE = 6.98) than the no-feedback group [M = 75.54mm, SE = 7.48; MD = 20.37, SE = 10.34, p = .05]. This is inconsistent with the tumescence data, where positive feedback resulted in decreased tumescence and no-feedback resulted in no change. As with the dysfunctionals, these results suggest that a different mechanism exists by which tumescence decreases for functional men.

Analysis Four: ***Effect of feedback on subjective responses during film.*** Two questionnaires (Sexual Arousal Questionnaire and Sexual Arousal and Feedback Questionnaire) were designed to measure a number of subjective experiences. Immediately following Film 1, subjects rated their responses on 10 visual analog scales (Sexual Arousal Questionnaire). After viewing Film 2, the no-feedback subjects again completed the Sexual Arousal Questionnaire and

the feedback subjects completed the same 10 visual analog scales and an additional 11 questions addressing their experience (Sexual Arousal and Feedback Questionnaire).

Dysfunctionals. For the dysfunctionals, within-group, paired-sample t-tests were conducted to examine changes in responses over time (from Film 1 to Film 2) by feedback condition (see tables 12 and 13). As predicted, negative feedback resulted in a significant decrease in attention to the film [Film 1: $\underline{M}$ = 108.21 mm, $\underline{SD}$ = 32.08, vs. Film 2: $\underline{M}$ = 87.29 mm, $\underline{SD}$ = 26.77; $\underline{t}$ (13) = 3.14, $\underline{p} < .01$]. However, this decrease was not associated with a decrease in tumescence. An ANCOVA, covarying the Film 1 subjective responses, revealed that after receiving feedback, the negative feedback group reported paying significantly less attention to the film ($\underline{M}$ = 85.39 mm, $\underline{SE}$ = 6.01) than subjects in the neutral feedback [$\underline{M}$ = 103.18 mm, $\underline{SE}$ = 6.03; $\underline{MD}$ = 17.79, $\underline{SE}$ = 8.53, $\underline{p} < .05$]; positive feedback [$\underline{M}$ = 109.51 mm, $\underline{SE}$ = 6.29; $\underline{MD}$ = 24.12, $\underline{SE}$ = 8.76, $\underline{p} < .01$]; and no-feedback groups [$\underline{M}$ = 110.12 mm, $\underline{SE}$ = 6.14; $\underline{MD}$ = 24.73, $\underline{SE}$ = 8.53, $\underline{p} < .01$]. This was unexpected, given that neutral and positive feedback, not negative feedback, resulted in decreased tumescence. Contrary to the study's hypotheses, there were no other significant changes on the other cognitive domains from Film 1 to Film 2 for the negative feedback dysfunctional subjects.

As expected, positive feedback significantly increased arousal [Film 1: $\underline{M}$ = 41.86 mm, $\underline{SD}$ = 34.42, vs. Film 2: $\underline{M}$ = 62.07 mm, $\underline{SD}$ = 44.21; $\underline{t}$ (13) = 3.08, $\underline{p} < .01$]; decreased anxiety [Film 1: $\underline{M}$ = 56.21 mm, $\underline{SD}$ = 38.70, vs. Film 2: $\underline{M}$ = 44.29 mm, $\underline{SD}$ = 28.33; $\underline{t}$ (13) = 2.42, $\underline{p} < .05$]; and decreased the number of negative thoughts [Film 1: $\underline{M}$ = 72.64 mm, $\underline{SD}$ = 44.89, vs. Film 2: $\underline{M}$ = 33.50 mm, $\underline{SD}$ = 28.20; $\underline{t}$ (13) = 2.71, $\underline{p} < .05$]. Contrary to the study's prediction, there was an increase in attention to the subject's body [Film 1: $\underline{M}$ = 68.79 mm, $\underline{SD}$ = 38.78, vs. Film 2: $\underline{M}$ = 86.93 mm, $\underline{SD}$ = 35.84; $\underline{t}$ (13) = 2.46, $\underline{p} < .05$]. This last result is the only one among

these cognitive domains that helps explain why positive feedback resulted in decreased tumescence. Contrary to the study's hypotheses, there were no other significant changes on the other cognitive domains from Film 1 to Film 2 for the positive feedback dysfunctional subjects. An ANCOVA, covarying the Film 1 subjective responses, revealed that after receiving feedback, the positive feedback group reported having significantly greater control over their erection ($\underline{M}$ = 46.71 mm, $\underline{SE}$ = 6.30) than subjects in the no-feedback group [$\underline{M}$ = 27.98 mm, $\underline{SE}$ = 6.11; $\underline{MD}$ = 18.73, $\underline{SE}$ = 8.77, $\underline{p} < .05$]. This is inconsistent with the tumescence data, given that positive feedback resulted in decreased tumescence, whereas the no-feedback group experienced no change. The ANCOVA also revealed that the positive feedback group reported having fewer negative thoughts ($\underline{M}$ = 26.93, $\underline{SE}$ = 8.95) than the negative feedback group [$\underline{M}$ = 58.35, $\underline{SE}$ = 8.39; $\underline{MD}$ = 31.43, $\underline{SE}$ = 12.23, $\underline{p} < .05$]. However, positive feedback resulted in decreased tumescence and negative feedback induced no change.

Contrary to expectations, no-feedback resulted in a statistically significant increase in arousal [Film 1: $\underline{M}$ = 55.20 mm, $\underline{SD}$ = 38.00, vs. Film 2: $\underline{M}$ = 72.00 mm, $\underline{SD}$ = 44.86; $\underline{t}$ (14) = 2.24, $p < .05$] and an increase in confidence to maintain an erection [Film 1: $\underline{M}$ = 31.53 mm, $\underline{SD}$ = 38.88, vs. Film 2: $\underline{M}$ = 45.47 mm, $\underline{SD}$ = 42.16; $\underline{t}$ (14) = 2.15, $\underline{p} < .05$]. However, these results are not surprising in light of the non-significant increase in tumescence. Interestingly, neutral feedback did not result in any significant changes on these cognitive domains over time, despite the fact that neutral feedback resulted in decreased tumescence.

To examine the effect of feedback condition on subjective responses related to receiving the erection score, a one-way ANOVA was conducted with subjective ratings during Film 2 as the dependent variable and feedback as the independent variable. Comparisons were made to examine differences among dysfunctionals for each feedback condition (see Table 15). Follow-

up comparisons revealed that the negative feedback resulted in the following expected differences from the other two feedback conditions: significantly greater distraction (M = 78.00 mm, SD = 41.15) than neutral feedback [M = 50.21 mm, SD = 37.66; t (38) = 2.07, $p < .05$]; significantly lower arousal (M = 48.07 mm, SD = 26.56) than positive feedback [M = 74.31 mm, SD = 28.62; t (38) = 2.10, $p < .05$]; significantly lower ability to maintain an erection (M = 56.21 mm, SD = 27.21) than positive feedback [M = 75.46 mm, SD = 21.34; t (38) = 2.04, $p < .05$]; significantly greater attention to the body (M = 92.36 mm, SD = 28.08) than neutral feedback [M = 61.85 mm, SD = 28.13; t (37) = 3.04, $p < .01$]; and significantly lower perceived score accuracy (M = 65.71 mm, SD = 20.11) than positive feedback [M = 96.92 mm, SD = 41.35; t (38) = 2.58, $p < .05$]. Counter to the study's hypothesis, there was a trend for the negative feedback score to result in less surprise (M = 51.29 mm, SD = 47.98) than positive feedback [M = 83.62 mm, SD = 36.59; t (38) = 1.87, p = .07]. This last contradictory finding is the only one among these cognitive domains that may explain why negative feedback did not result in decreased tumescence but positive feedback did. It appears that, for the dysfunctional subjects, the more surprised they were about the feedback they received, the worse they did. Because the item measuring the level of distraction caused by the erection score contradicted the surprise item and tumescence, it appears that surprise is a different construct than distraction.

Functionals. For the functionals, within-group, paired-sample t-tests were conducted to examine changes in responses over time (from Film 1 to Film 2) by feedback condition (see tables 12 and 13). Contrary to the study's hypotheses, negative feedback decreased all of the following: arousal [Film 1: M = 75.31 mm, SD = 31.83, vs. Film 2: M = 55.38 mm, SD = 27.33; t (12) = 2.67, $p < .05$]; confidence to maintain an erection [Film 1: M = 84.69 mm, SD = 38.68, vs. Film 2: M = 60.31 mm, SD = 29.94; t (12) = 3.45, $p < .01$]; perceived size of erection [Film 1: M

= 86.38 mm, SD = 35.73, vs. Film 2: M = 50.62 mm, SD = 26.88; t (12) = 5.33, p < .001]; perceived control of erection [Film 1: M = 65.92 mm, SD = 43.99, vs. Film 2: M = 39.23 mm, SD = 23.42; t (12) = 2.20, p < .05]; and reported similarity to reality [Film 1: M = 54.62 mm, SD = 44.53, vs. Film 2: M = 41.15 mm, SD = 37.84; t (12) = 2.48, p < .05]. These results, which mimic the results of the dysfunctional subjects, may explain why negative feedback resulted in decreased tumescence for the functional subjects. Furthermore, an ANCOVA, covarying the Film 1 subjective responses, revealed that after receiving feedback, the negative feedback group reported lower levels than most of the other feedback conditions on the following variables: arousal, anxiety, confidence to maintain an erection, size of erection, control over erection, negative thoughts, and thought interference (see Table 14).

Unexpectedly, neutral feedback resulted in a significant increase in attention to the subject's body [Film 1: M = 70.92 mm, SD = 44.86, vs. Film 2: M = 93.62 mm, SD = 36.96; t (12) = 2.27, p < .05]. However, this finding did not seem to make a difference since neutral feedback did not result in a change in tumescence.

As predicted, positive feedback resulted in a statistically significant increase in arousal [Film 1: M = 62.81 mm, SD = 35.93, vs. Film 2: M = 77.25 mm, SD = 28.65; t (15) = 2.78, p < .05]; and in perceived size of erection [Film 1: M = 55.25 mm, SD = 41.38, vs. Film 2: M = 78.94 mm, SD = 39.41; t (15) = 3.33, p < .01]. These results are inconsistent with the decrease in tumescence. Contrary to the study's hypotheses, there were no other significant changes on the other cognitive domains.

To examine the effect of feedback on subjective responses, a one-way ANOVA was conducted with subjective ratings during Film 2 as the dependent variable and feedback as the independent variable. Comparisons were made to examine differences among functionals in

subjective responses for each feedback condition (see Table 15). Follow-up comparisons revealed that the negative feedback score resulted in the following unexpected differences: greater distraction (M = 92.62 mm, SD = 30.28) than neutral feedback [M = 55.62 mm, SD = 35.51; t (39) = 2.70, $p < .05$] and positive feedback [M = 58.06 mm, SD = 37.94; t (39) = 2.65, $p < .05$]; lower arousal (M = 43.85 mm, SD = 39.18) than positive feedback [M = 81.88 mm, SD = 29.70; t (39) = 3.30, $p < .01$]; greater anxiety (M = 106.38 mm, SD = 21.27) than neutral feedback [M = 81.38 mm, SD = 22.56; t (39) = 2.42, $p < .05$] and positive feedback [M = 76.00 mm, SD = 32.06; t (39) = 3.10, $p < .01$]; lower confidence (M = 54.15 mm, SD = 31.63) than positive feedback [M = 77.38 mm, SD = 24.34; t (39) = 2.57, $p < .05$]; and less perceived control (M = 56.92 mm, SD = 30.81) than neutral feedback [M = 79.08 mm, SD = 24.89; t (39) = 2.11, $p < .05$] and positive feedback [M = 80.56 mm, SD = 24.56; t (39) = 2.37, $p < .05$]. Lastly, negative feedback (M = 94.08 mm, SD = 37.16) and positive feedback (M = 92.38 mm, SD = 30.91) both resulted in greater surprise than neutral feedback [M = 38.15 mm, SD = 44.79; t (39) = 3.80, $p < .001$; and t (39) = 3.87, $p < .001$, respectively]. These contradictory results may help to explain why negative feedback unexpectedly resulted in decreased tumescence. Like the earlier cognitive domains, these variables appear similar to those of the dysfunctional subjects. As with the dysfunctional subjects, the only one of these cognitive variables that is consistent with the tumescence results of the functional subjects is the level of surprise about the erection score. Like the dysfunctional subjects, distraction is not consistent with the surprise and tumescence findings, supporting the conclusion that surprise is a different construct than distraction.

Dysfunctionals and Functionals. A repeated measures ANOVA was conducted with the subjective responses over time (Film 1 vs. Film 2) by group and feedback conditions. The only

dependent variable for which there was a significant film x group x feedback interaction was reported erection size [$F(3, 105) = 3.30$, $p < .05$]. This further supports the conclusion that both the dysfunctional and functional subjects believed the false feedback. An ANCOVA, covarying the Film 1 subjective responses, suggests that after receiving feedback, the functional negative feedback group reported a significantly smaller perceived erection size ($M = 36.55$ mm, $SE = 8.14$) than subjects in the other feedback conditions. The positive feedback group reported a significantly larger perceived erection size ($M = 86.92$ mm, $SE = 7.25$) than the other feedback conditions. The functionals reported achieving the size of erection they were falsely shown. However, there were no significant differences among the erection sizes reported by the dysfunctionals (see Table 14). Thus, the functionals appear to have more convincingly believed the false feedback.

Another ANOVA was conducted with the subjective responses to the Film 2 erection score by group and feedback. The only variable that demonstrated a significant group x feedback interaction effect was surprise over the erection score [$F(2, 77) = 4.71$, $p < .05$]. This further suggests that surprise is a cognitive variable that accurately differentiates among the two groups and three feedback conditions.

Not surprisingly, functionals' ratings were greater than dysfunctionals' ratings in a number of domains: confidence [$M = 42.05$ mm, $SD = 41.47$, vs. $M = 69.93$ mm, $SD = 44.43$; $F(1, 111) = 11.89$, $p < .001$], perceived size of erection [$M = 40.98$ mm, $SD = 46.69$, vs. $M = 66.52$ mm, $SD = 47.56$; $F(1, 111) = 8.29$, $p < .01$], and control of erection [$M = 34.63$ mm, $SD = 36.76$, vs. $M = 58.43$ mm, $SD = 41.50$; $F(1, 111) = 10.42$, $p < .01$]. It is surprising that there were not overall differences between the dysfunctional and functional subjects on all of the variables. These results are presented in Table 12.

Analysis Five: ***Effect of feedback on attention to film.*** The Film Quiz was designed to measure the subjects' attention to the erotic stimulus (Film 2). Bivariate correlations were calculated between the Film Quiz scores and tumescence during Film 2. Contrary to the study's hypothesis, the two measures were not correlated for the dysfunctional subjects ($\underline{R}$ = -.067, $\underline{p}$ > .10), functional subjects ($\underline{R}$ = .183, $\underline{p}$ > .10), or all subjects combined ($\underline{R}$ = .072, $\underline{p}$ > .10). Presented in Table 16 are the mean scores for each feedback condition. The mean score for the dysfunctional subjects was 9.75 ($\underline{SD}$ = 2.61) and the mean score for the functional subjects was 9.95 ($\underline{SD}$ = 2.54). A 2 x 4 group by feedback condition ANOVA revealed that the scores were not significantly different among the eight categories. This is inconsistent with the subjects' self-report, given that negative feedback resulted in decreased attention to the film for the dysfunctionals (as reported on the Sexual Arousal and Feedback Questionnaire), positive feedback resulted in increased attention to the film for the dysfunctionals, and neutral feedback resulted in increased attention to the film for the functionals. These findings suggest that the Film Quiz may not have been an adequate measure of attention to the film.

Summary. The study results are summarized in Tables 17 and 18. Table 17 provides a listing of the variables that increased from Film 1 to Film 2 while Table 18 lists the variables that decreased from Film 1 to Film 2.

Part VI: Discussion

Contrary to the study's hypotheses, positive feedback decreased tumescence for both the dysfunctional and functional subjects. This occurred, despite an increase in expectancy, confidence, and self-reported arousal. These results are inconsistent with the Sbrocco and Barlow (1996) model of sexual dysfunction, which predicts that, for both dysfunctionals and functionals, positive outcome expectancy and confidence results in functional performance. Also in contrast with the Sbrocco and Barlow (1996) model, negative feedback resulted in decreased outcome expectancy but did not induce a change in tumescence for the dysfunctionals. According to the Sbrocco and Barlow (1996) model, decreased expectancy and confidence should result in dysfunctional performance. The lack of change in tumescence for the negative feedback dysfunctionals in this study may be partially explained by the absence of an accompanying change in confidence and, subsequently, no change in self-reported arousal. Finally, negative feedback unexpectedly resulted in decreased tumescence for the functionals. It was hypothesized, according to the Sbrocco and Barlow (1996) model, that the functionals would overcome the challenge of the erection discrepancy by efficiently focusing on their historically positive outcome expectancy and confidence. Instead, negative feedback decreased their outcome expectancy, confidence, and arousal. Therefore, one of the significant findings of this study is that the erection expectancy and confidence of normally functioning men is quite fragile, potentially putting everyone at risk for erectile dysfunction.

This study also found that functional men are apt to believe false feedback about their erections, as the functionals reported achieving erection sizes consistent with the false feedback they received. In the case of positive feedback, the functionals reported achieving increased erections when in reality they produced smaller erections. Stated another way, the functional men

were unaware of their actual tumescence when they were shown false positive feedback. This is consistent with previous research which found that functional men overestimated erection levels despite actual decrements in penile tumescence (Abrahamson et al., 1985b; Cranston-Cuebas et al, 1989; Farkas et al, 1979; Viglietta, 1982).

The present study provided men a source of feedback other than their own observations. It is interesting that even though functionals have a tendency to overestimate their tumescence, they are still surprised when they find out they are doing better than they expected. Perhaps functional men rely on their own accurate-to-inflated observations of their performance and do not normally seek feedback from other sources (such as their partners). And because functional men are not used to seeking or processing feedback, they are surprised when they receive unexpected feedback. The dysfunctional men, however, did not report changes in their erections, even when there were actual changes. The reason for this may be that dysfunctional men are so used to seeking feedback from other sources and then interpreting it as being negative, that they develop a negative schema which cannot be easily changed. For example, dysfunctional men may interpret any facial expression from their partner as being disappointment in their performance. Thus, both groups are at risk for different reasons. It is difficult for dysfunctional men to break out of their negative schema and the schemata of functional men can easily be changed with any sort of feedback, positive or negative. In fact, this readily-changed schemata may explain how erectile dysfunction begins and is maintained. The implications of this possibility are discussed later.

The only variable that predicted a change in tumescence was the self-reported level of surprise concerning the feedback. For both the dysfunctionals and functionals, the feedback groups that experienced a decrease in tumescence were more surprised by the feedback than the

groups that experienced no change in tumescence. Interestingly, seemingly similar cognitive variables, such as thought interference, negative-type thoughts, and distraction, did not predict a change in tumescence. The reason for this may be that surprise is easier to recognize and/or understand than the other, more abstract constructs. For example, a person may acknowledge that he was surprised by positive feedback but not realize that the surprising feedback was distracting or interfered with functional performance because it led to positive thoughts such as "I had no idea I was so huge", "I can't wait to have sex now and impress my partner", or "Maybe I don't have a problem after all." Likewise, surprising negative feedback may have led to thoughts such as "I know I'm bigger than that", "I can do better than this", or "If this were a real situation I would do fine." These kinds of positive thoughts may not be recognized as interference, negative-type thinking, or distractions.

An examination of the thought listings made by the subjects following each film supports the finding that unexpected feedback was surprising to them. None of the dysfunctionals made comments indicating that negative feedback was surprising. Instead, they recalled having thoughts such as "When is the erection score going to come up?", "My score took most of my attention", "How low the number was." In contrast, the dysfunctionals made remarks concerning positive feedback such as "I was distracted by the erection score", "Surprise at erection score", "I was surprised at the erection score", "Concerned that I might not be able to achieve erection again", "I kept noticing the number on the lower right to check my response level", and "The erection score was a little distracting." Even the neutral feedback condition bothered some of the dysfunctionals (as evidenced by a decrease in tumescence) because they recalled having thoughts like "I don't like watching erection score", "Why I could not reach top score", "Come on score", "Is this score for real?", and "Try harder."

The functionals noted the following types of thoughts during the negative feedback condition: "The score was disappointing", "I can't believe I'm going to score 0", "Is that all for score?", "How can I move score up?", "How disappointing", "Zero—not good!", "Keep going, keep going . . . hey, I'm stagnating", and "I can't max out at 8 – that sucks!" Positive feedback also was surprising and distracting to the functionals as they listed thoughts like "I was distracted by the erection score", "Surprise at erection score", and "I was surprised at the erection score." Consistent with no change in tumescence in the neutral feedback condition for the functionals and a low level of self-reported surprise, they listed no thoughts having to do with distraction or surprise concerning the erection score. Instead, they recalled having erotic, on-task thoughts such as "Lingerie is nice", "Kissing and nipples are good", "Oral sex", "Intercourse", "Having sex now", "Wanted to have sex", "Liked the oral sex", "and "No specific thoughts – concentrating on activity of film."

What is surprising to functionals may not be surprising to dysfunctional men. The functionals were surprised by negative feedback but the dysfunctionals were not. This supports the previously discussed notion of a negative schema for dysfunctionals. Dysfunctional men expect negative feedback and are therefore not surprised when they receive it. Consequently, there is no change in performance. Functional men, on the other hand, were surprised by negative feedback. This supports the hypothesis that sexually functional men are not accustomed to receiving feedback and are therefore surprised when they receive anything other than what they expect. In addition, neutral feedback was somewhat surprising for the dysfunctionals but not for the functionals. Apparently even neutral feedback is outside the expected range defined by the negative schema of dysfunctional men. Naturally, neutral feedback would not be surprising for functional men since it is what they expect and what they are used to.

Both the dysfunctionals and functionals were surprised by positive feedback. This is consistent with the notion that experiences outside the realm of perceived usual performance are suppressed. Positive feedback is inconsistent with the negative schema of dysfunctional men, and functional men are not accustomed to receiving anything other than internally-generated, "status quo" feedback. Dysfunctional men do not interpret feedback (e.g., facial expressions from partner) as being positive and functional men do not look for positive or exaggerated feedback.

The Sbrocco & Barlow (1996) model predicts that positive outcome expectancies and confidence results in functional performance. In this study both the dysfunctionals and functionals experienced increased expectancy and confidence with positive feedback, but dysfunctional performance resulted, suggesting this model needs revision. The intervening variable appears to be surprise about the discrepancy between expected and actual performance. Figure 17 presents a revised model of sexual dysfunction. The difference from the Sbrocco and Barlow (1996) model occurs during Stage 2, after a discrepancy is noticed. If the man is surprised by the discrepancy, he assesses his outcome expectancies and confidence. Even if his expectations and confidence are high, he is unable to use this to his advantage by efficiently focusing on these. Instead, his attention is shared with thoughts that are trying to make sense of the surprising feedback. Instead of (or in addition to) concentrating on thoughts such as "that woman is so sexy," he likely is having thoughts such as "I can't believe I'm doing this well!" Both kinds of thoughts are positive and sex-related but only the former is erotic and on-task. This divided attention results in disengagement and dysfunctional performance.

If, on the other hand, the man's expectations and confidence are low, he focuses on negative thoughts such as "I'm such a disappointment", "I can't believe I'm doing this badly", or

"What's wrong with me?" These kinds of non-erotic, off-task thoughts result in disengagement and dysfunctional performance.

If the man is not surprised by the discrepancy, he also assesses his expectations and confidence. If he has low expectations and confidence, he focuses on negative thoughts. This non-erotic, off-task thinking results in disengagement and dysfunctional performance. If he has high expectations and confidence, his focus is on positive thoughts. These kinds of erotic, on-task thoughts result in functional performance.

Unfortunately, we cannot know for sure where the attention of the subjects was at any given time. This study attempted to measure attention to erotica with the film quiz but the instrument was apparently not sensitive enough to differentiate among the feedback conditions. It may be that men can continue to pay attention to erotica while they also entertain non-erotic, off-task thoughts. Future studies should continue to search for methods of tracking attentional focus during sexual performance tasks. The thought listings reported by the subjects after each film provided some insight into the kinds of thoughts they had during the films. An empirical study of similar thought listings may prove invaluable in better understanding the cognitive processes involved in functional and dysfunctional performance.

The tumescence results from this study were consistent with the findings from the Bach, Brown, and Barlow (1999) study, which found that providing false negative feedback to functional males resulted in decreased tumescence. In Bach, Brown, and Barlow (1999), subjects were provided with harsh verbal feedback from a female experimenter. The feedback was provided in person between the two assessments. For the present study, it was hypothesized that less harsh, impersonal feedback presented concurrent with assessment would allow subjects to overcome the challenge of receiving negative feedback by more efficiently focusing on positive

outcome expectancies and confidence and thereby increase their tumescence. However, this was not the case. It is likely that the subjects in the Bach, et al. (1999) study were as surprised by the negative feedback they received as the subjects in the present study. Surprise over the feedback is probably more predictive of performance than the manner in which feedback is presented. In fact, it may be that negative feedback of any kind, and delivered in any manner, is surprising to functional men. This would be consistent with our hypothesis that functional men are not accustomed to receiving feedback about their sexual functioning.

The tumescence results were in contrast to the findings of Cranston-Cuebas, Barlow, Mitchell, & Athanasiou (1993), which found that functional men given an erection detraction placebo pill achieved greater tumescence than the subjects who took an erection enhancement placebo pill, while the results were opposite for dysfunctionals. In the present study, functionals achieved equally decreased tumescence with negative and positive feedback. The difference between the two studies is that the subjects in the former study were provided "feed-forward" information (i.e., they were challenged in advance of the task) whereas the subjects in the present study were provided real-time feedback information. The men in the Cranston-Cuebas, et al. (1993) study who took the erection detraction placebo pill were threatened with the possibility of a discrepancy but perhaps were never surprised by their performance because they relied on themselves for feedback. Therefore, they may have been able to efficiently focus on positive outcome expectancies and confidence because they had no other information to process or competing thoughts with which to contend.

Likewise, the dysfunctionals in the Cranston-Cuebas, et al. (1993) study may not have been surprised by their performance because they did not receive feedback. The erection detraction placebo pill may have lowered their already low outcome expectancies and confidence.

Because they had no surprising information or competing thoughts, they were free to efficiently focus on these less-than-usual outcome expectancies and confidence, leading to disengagement and dysfunctional performance. The fact that the erection enhancement placebo pill did not induce results any different than the no-effect placebo pill supports our current hypothesis that dysfunctional men operate within a negative schema that cannot easily be changed in a positive direction.

It is interesting, in the context of the present study, that the dysfunctional women in the Palace (1995a) study experienced increased vaginal vasocongestive responding after receiving false positive feedback. The striking difference between the results of the two studies may be explained by a basic difference between males and females. Perhaps women are not surprised by false feedback and therefore do not have to share their attention to erotica with thoughts dedicated to processing unexpected information. It may be that females do not know what to expect during a sexual demand task because of a history of not seeking nor receiving any feedback (including self-observation). If these hypotheses about females are true, then the findings of the Palace (1995a) study can be explained by our revised model of sexual dysfunction. Future studies involving the sexual performance of women should examine the element of surprise regarding false feedback. Future studies should also examine the effect of false negative and neutral feedback on females, as well as the effect of false feedback on functional women.

If surprise about sexual performance can induce dysfunctional performance, the role of surprise in the etiology of erectile dysfunction is worthy of further consideration. In the revised model of sexual dysfunction presented earlier (see Figure 17) the first step toward dysfunctional performance is a reaction of surprise. This could occur internally or externally. Internally-generated surprise means he observes that his tumescence is not what he expected. This could be

a decreased erection because he is intoxicated, tired, stressed, ill, older, or on medication, or an increased erection because he is unusually aroused, on medication, or under the influence of a substance. Perhaps the man simply pays attention to his usual tumescence for the first time in his life. Examples of externally-generated surprise might include biofeedback (such as during an experiment or evaluation) or unexpected comments from a partner. If he is surprised by his erection, then his performance may suffer because he either efficiently focuses on negative outcome expectancies and no confidence or inefficiently focuses on positive outcome expectancies and confidence. It is unknown at this point what is considered surprising and who is most likely to be surprised. Future research should address these important issues, perhaps by providing different forms of feedback to functional and dysfunctional males and females.

The subsequent question is, what happens the next time the man attempts sexual engagement? It would seem that if he believes the previous surprising performance was due to a temporary condition that no longer exists (e.g., he is no longer drunk or uncomfortable) then his expectancies for functional performance and confidence would remain unchanged/high. If his performance was then functional or "status quo," he would not be surprised by this and functional performance would continue. But if his performance again surprises him, leading again to dysfunctional performance, his expectations and confidence may begin to lower. If the man begins to believe that the surprising performance may be due to a permanent condition, his outcome expectancies and confidence may lower considerably. Eventually, the man may begin to avoid sexual encounters out of fear of failure and disappointment. When he does have sex, he will likely seek feedback as a way to evaluate himself. But because of a developing negative schema, everything is interpreted as negative feedback. He expects dysfunctional performance

and is not surprised when he receives it. The man is caught in a negative feedback loop from which it is difficult to break free.

Future studies should examine this potential explanation for erectile dysfunction. Expanding on the paradigm in the present study, subsequent films could be shown to the subjects to determine if dysfunctional performance continues. In addition, subjects could be asked to write down, after viewing each film, explanations for their performance. The revised model of sexual dysfunction would predict that subjects who attribute their surprising performance to temporary external factors (e.g., "I'm just nervous in the lab") would be less likely to experience dysfunctional performance on subsequent films without feedback than subjects who blame their performance on permanent internal conditions (e.g., "Something is wrong with me").

The revised model of sexual dysfunction offers potentially important treatment and prevention implications. In terms of prevention, it may be that all men are at risk of dysfunctional performance due to surprising feedback. The first problem is that men may only be accustomed to interpreting "status quo" feedback. They expect "status quo" performance and may be unprepared when something out of the ordinary, either positive or negative, occurs. This sets them up for possibly attributing permanent explanations for what may have been a temporary condition.

Prevention of erectile dysfunction may be possible through sex education. Men need to be educated concerning the fact that everyone experiences temporary performance discrepancies during their lives (especially as they get older) that has no bearing on future performance. This effort at widespread discrepancy inoculation should, according to the revised model of sexual dysfunction, reduce the chance of being surprised when discrepancies do occur during sex. The idea is that if men are given the chance to process this kind of surprising information prior to

being in a sexual encounter, they will spend less cognitive energy processing discrepancies at a time when they need to efficiently focus their attention on erotic, on-task thinking. This prevention plan could be tested empirically by providing subjects with temporary explanations for unexpected results prior to giving them false feedback. The revised model of sexual dysfunction would predict that subjects who are given such explanations would be less likely to experience dysfunctional performance than subjects given no explanations.

Many men, however, are already stuck in the negative feedback loop (depicted on the revised model of sexual dysfunction). The problem may be that dysfunctional men expect dysfunctional performance and seek information that confirms dysfunctional performance. It seems from the present study that one of the worst things a partner can do is to provide positive feedback such as making statements like "You can do it! You're the man!" With their negative schema, dysfunctional men are likely to be surprised by this and, although they may raise their outcome expectancies and confidence, dysfunctional performance will result because they are unable to efficiently focus on erotic, on-task thoughts. In fact, even neutral feedback, such as remarks like "You're starting to grow," may not pass through the negative filter of dysfunctionals and appear surprising to them.

Negative feedback did not significantly alter the tumescence of the dysfunctionals in the present study. However, there was a downward trend toward dysfunctional performance and it is possible that continued negative feedback would eventually result in significantly decreased tumescence. In addition, it seems intuitive that the way for dysfunctionals to break out of the negative feedback loop is to begin to accept accurate feedback and to expect functional performance. This seems highly unlikely if dysfunctional men are provided continuous negative feedback such as comments from their partner like "Nothing is happening." On the other hand,

no-feedback resulted in a trend toward increased average tumescence. In addition, the tumescence appeared to be continuing to increase at the end of Film 2. It is possible that viewing subsequent films without feedback and of longer duration would eventually result in a significant increase in tumescence. Future studies should explore this possibility, as well as the possibility that continued negative feedback would result in significantly decreased tumescence. The well-established success of Masters and Johnson's technique of sensate focus, in which dysfunctional men spontaneously recover their erections when they and their partner pay no attention to his penis during sexual activity, certainly supports the hypothesis that viewing subsequent films without feedback would eventually result in significantly increased tumescence. The reason for this scenario may be that dysfunctional men are unable to seek feedback in the laboratory paradigm since they cannot see their penis and they have no partner from whom to read off.

Feedback may only be helpful to dysfunctional men after they break free from their negative schema. And this can probably only happen by men learning to stop seeking feedback for a while, which eliminates self-confirmation of dysfunctional performance (which leads to an efficient focus on negative outcome expectancies and no confidence) and the chance of surprising performance. This frees them up to be able to experience spontaneous erections. Only after dysfunctional men are prepared to believe that their newly found tumescence is a permanent change are they ready to be taught how to seek and receive accurate feedback. Accurate feedback is apparently essential for continued functional performance, as evidenced by the functional subjects' successful performance with neutral feedback in this study. In addition, the revised model of sexual dysfunction would suggest that dysfunctional men should be inoculated against future surprise through education regarding normal, expected erection discrepancies experienced by all men.

The findings of the present study must be taken in context with a number of limitations. The most obvious limitation is the fact that trying to get sexually aroused in a laboratory is not nearly the same as trying to get aroused with a partner in milieu. However, most of the subjects managed to achieve a certain level of arousal, enough so that there were significant differences among some of the feedback conditions. In addition, many of the men (particularly dysfunctionals) reported that the pressure they felt to perform in the laboratory felt similar to the pressure they feel to perform with partners. In this respect, the paradigm may be an excellent analog for a sexual performance demand situation. Many of the participants in this study complained that the scenario would have been more like an actual sexual situation if they had been allowed to touch their genitals while viewing the film segments. In fact, most of the men reported that they thought they could have increased their erections with some physical stimulation. It was explained to the subjects that the reason why touching was not allowed was because there was no way of standardizing the stimulation each man would receive and self-manipulation could interfere with the strain gauge and result in artifactual readings. However, a sex research lab in The Netherlands has reportedly solved these problems by providing male subjects standardized vibrotactile stimulation of the penis by means of a commercially available ring-shaped vibrator with a frequency of approximately 50 Hz (Janssen, Everaerd, Lunsen, R.H.W. Van, & Oerlemans, 1994a). The vibrator is worn just below the coronal ridge. The device seems to serve its purpose well, as Janssen, Everaerd, Lunsen, R.H.W. Van, and Oerlemans (1994b) reported that the combination of erotic film and vibration resulted in stronger penile responses than the stimuli presented separately for both functional and dysfunctional men. It would probably be worthwhile to add vibrotactile stimulation to the protocol of the present

study for future research in order to make the paradigm more realistic and to increase genital responding.

Another limitation of this study is that though the films were equaled on subjective arousal in a pilot study, they were not equaled with regard to tumescence. The fact that there was no significant difference in tumescence between the two films for both the dysfunctionals and functionals in the no-feedback condition supports the conclusion that the two films, on average, were equally arousing. However, future studies should include tumescence measurements in addition to self-report of arousal when comparing film segments for similar levels of arousal induction when selecting erotica for the study.

The choice of equally arousing stimuli is often a concern in studies of this type when the same stimulus is shown to all subjects. Many of the subjects reported that they would have been more aroused if they had viewed a film that was more to their liking (i.e., African-American females, Asian females, older females, larger females, lesbian sex, anal sex, use of devices). Because previous studies in the literature have shown subjects the same film segments and in order to standardize the level of erotica, this study followed the same protocol. However, for future studies it may be more important for each subject to be maximally aroused than it is to ensure standardization of erotic material. This could be accomplished by allowing subjects to choose their own type of film to watch.

Another limitation regarding the films is the length of the segment and assessment period. Similar to above, the five minute duration for each film was selected because previous studies used this length of time. However, the tumescence from the no-feedback condition had not yet leveled off or started to come down at the end of the second film. Therefore, a longer film segment should be used in future studies. It makes sense that the erotica should be presented long

enough that the entire cycle of arousal (from beginning to end of erection) can be analyzed. Important information may be lost (e.g., the pattern of total arousal) if the stimulation is too short. Future research is needed to determine an appropriate length of films to allow for the collection of as much important information as possible.

Another limitation of the study is that diagnoses were based on self-reported interview and, for dysfunctionals, medical referral by a urologist. All diagnoses were reviewed in a consensus conference with a physician and clinical psychologist. This reflects the need for a thorough biopsychosocial evaluation and validated assessment methods for sexual disorders. Although the Sexual Dysfunction Interview-revised (SDI; Sbrocco, Weisberg, & Barlow, 1995) ensures that all of the DSM-IV criteria for sexual dysfunctions are asked of the subjects, the instrument has not been empirically validated. The functional status of the functional subjects was based on their self-report because physical examinations were not required to participate in this study. Future studies should ensure that all functional subjects receive a comprehensive physical exam.

Another limitation of this study is that the results cannot be generalized to females. As discussed earlier, the success in the Palace (1995a) study of increasing sexual responding in dysfunctional women with positive feedback suggests that something different is going on with dysfunctional women than with dysfunctional men. It may very well be that dysfunctional women are not surprised by positive feedback but the revised model of sexual dysfunction should not be used to explain female sexual performance without experimentally applying the model to women.

Lastly, It should first be pointed out that the use of the term "feedback" in this study is a misnomer. "Feedback" traditionally refers to the receiving of accurate information. There

probably is no such thing as "false feedback" as these two words contradict each other, much like referring to someone as a "smart dummy." A more accurate title for this study is "The Effects of False Physiological Information on Sexual Arousal in Sexually Dysfunctional and Functional Males." However, because previous studies upon which this study is built used the expression "false feedback," the author has chosen consistency at the expense of proper English.

In conclusion, the present study found that positive expectations for and confidence in functional sexual performance may be necessary but not sufficient factors for successful tumescence. Positive outcome expectancies and confidence may only be useful if the man is not surprised by his performance. The dysfunctional subjects in this study were surprised by the false positive feedback they received, which may have cognitively interfered with their ability to take advantage of their increased outcome expectancies and confidence. This resulted in decreased tumescence. The dysfunctionals were not surprised by negative feedback, perhaps because they expected negative information, and there was no change in their tumescence as a result. The functionals were surprised by both positive and negative feedback, which resulted in decreased tumescence from Film 1 to Film 2. It is possible that functional men are not prepared to receive anything other than status quo information about their sexual functioning and have difficulty staying on task when they receive unexpected feedback. The results of this study suggest that all men may be at risk for developing erectile dysfunction via this route. Educating men about the fact that it is normal to experience temporary tumescence variations may be an important inoculation against the dangers of surprising feedback. The results also suggest that dysfunctional men expect negative feedback and are unable to process information that conflicts with this expectation. Treatment would have to involve getting dysfunctionals to stop seeking feedback until they are open to changing their expectations and can be taught how to seek and

receive accurate feedback. Further research is clearly called for to more fully examine these hypotheses.

References

Abrahamson, D.J. (1986). The effects of two types of distracting tasks on sexual arousal in sexually functional and dysfunctional males. Unpublished doctoral dissertation, State University of New York at Albany, Albany, New York.

Abrahamson, D.J. Barlow, D.H., & Abrahamson, L.S. (1989). Differential effects of performance demand and distraction on sexually functional and dysfunctional males. Journal of Abnormal Psychology, 89, 241-247.

Abrahamson, D.J., Barlow, D.H., Beck, J.G., Sakheim, D.K., & Kelly, J.P. (1985). The effects of attentional focus and partner responsiveness on sexual responding: Replication and extension. Archives of Sexual Behavior, 14, 361-371.

Abrahamson, D. J., Barlow D. H., Sakheim, D. K., Beck, J. G., & Athanasiou, R. (1985). Effects of distraction on sexual responding in functional and dysfunctional men. Behavior Therapy, 16, 503-515.

Ackerman, M.D., & Carey, M.P. (1995). Psychology's role in the assessment of erectile dysfunction: Historical precedents, current knowledge, and methods. Journal of Consulting and Clinical Psychology, 63, 862-876.

Adams, H. E., Motsinger, M. S., McAnulty, R. D., & Moore, A. L. (1992). Voluntary control of penile tumescence among homosexual and heterosexual subjects. Archives of Sexual Behavior, 21, 17-31.

Allen, R., & Brendler, C.B. (1990). Snap-gauge compared to a full nocturnal penile tumescence study for evaluation of patients with erectile impotence. Journal of Urology, 143, 51.

Allen, R.P., Smolev, J.K., Engel, R.M., et al. (1993). Comparison of Rigiscan and formal nocturnal penile tumescence testing in the evaluation of erectile rigidity. Journal of Urology, 149, 1265.

Al-Juburi, A.Z., & O'Donnell, P.D. (1990). Synergist erection system: Clinical experience. Urology, 35, 304.

Aloui, R., Iwaz, J., Kokkidis, M.J, et al. (1992). A new vacuum device as alternative treatment for impotence. British Journal of Urology, 70, 652.

Althof, S.E., & Turner, L.A. (1992). Self-injection therapy and external vacuum devices in the treatment of erectile dysfunction: Methods and outcome. In R.C. Rosen & S.R. Leiblum (Eds.), Erectile disorders: Assessment and treatment. (pp. 283-312). New York: Guilford Press.

American Psychiatric Association (1980). Diagnostic and statistical manual of mental disorders (3rd ed.). Washington, D.C.

American Psychiatric Association (1987). Diagnostic and statistical manual of mental disorders (3rd ed., revised). Washington, D.C.

American Psychiatric Association (1994). Diagnostic and statistical manual of mental disorders (4^{th} ed.). Washington, D.C.

Anders, E.K., Bradley, W.E., & Krane, R.J. (1983). Nocturnal penile rigidity measured by the snap-gauge band. Journal of Urology, 129, 964.

Ansari, J.M. (1976). Impotence: Prognosis (a controlled study). British Journal of Psychiatry, 128, 194-198.

Apfelbaum, B. (1988). An ego-analytic perspective on desire disorders. In S.R. Leiblum & R.C. Rosen (Eds.), Sexual Desire Disorders (pp. 75-105). New York: Guilford Press.

Apfelbaum, B. (1989). Retarded ejaculation: A much-misunderstood syndrome. In S.R. Leiblum & R.C. Rosen (Eds.), Principles and practice of sex therapy: Update for the 1990s (pp. 168-206). New York: Guilford Press.

Arauz-Pacheco, C., Basco, M., Ramirez, L.C., et al. (1992). Treatment of diabetic impotence with a vacuum device: Efficacy and effects on psychological status. American Journal of Medical Science, 303, 281.

Avasthi, A., Basu, D., Kulhara, P., & Banerjee, S.T. (1994). Psychosexual dysfunction in indian male patients: Revisited after seven years. Archives of Sexual Behavior, 23(6), 685-695.

Bach, A. K., Brown, T. A., & Barlow, D. H. (November, 1997). Efficacy expectancies and male sexual arousal: the effects of false negative feedback on sexually functional males. Paper presented at the annual convention of the Association for Advancement of Behavior Therapy, Miami Beach, Fl.

Bach, A.K., Brown, T.A., & Barlow, D.H. (1999). The effects of false negative feedback on efficacy expectancies and sexual arousal in sexually functional males. Behavior Therapy, 30, 79-95.

Bancroft, J. (1989). Human sexuality and its problems. New York: Churchill Livingstone.

Bancroft, J. (1997). Sexual problems. In D.M. Clark & C.G. Fairburn (Eds.), Science and practice of cognitive behaviour therapy (pp. 243-257). Oxford: Oxford University Press.

Bancroft, J. & Malone, N. (1995). The clinical assessment of erectile dysfunction: A comparison of nocturnal penile tumescence monitoring and intracavernosal injections. International Journal of Impotence Research, 7, 123-30.

Bancroft, J., & Coles, L. (1976). Three years' experience in a sexual problems clinic. British Medical Journal, i, 1575-1577.

Bancroft, J., & Wu, F. (1983). Changes in erectile responsiveness during androgen replacement therapy. Archives of Sexual Behavior, 12, 59-66.

Bansal, S. (1988). Sexual dysfunction in hypertensive men: A critical review of the literature. Hypertension, 12, 1-10.

Barlow, D. H. (1986). Causes of sexual dysfunction: The role of anxiety and cognitive interference. Journal of Consulting and Clinical Psychology, 54, 140-148.

Barlow, D. H. (1988). Anxiety and its disorders: The nature and treatment of anxiety and panic. NY: Guilford Press.

Barlow, D. H., & Mavissakalian, M. (Eds.) (1981). Directions in the assessment and treatment of phobia: The next decade. In Phobia: Psychological and pharmacological treatment 199-245. New York: Guilford Press.

Barlow, D.H., Mavissakalian, M., & Schofield, L. (1980). Patterns of desynchrony in agoraphobia. Behaviour Research and Therapy, 18, 441-448.

Barlow, D. H., Sakheim, D. & Beck, J. G. (1983). Anxiety increases sexual arousal. Journal of Abnormal Psychology, 92, 49-54.

Barry, J.M., Glank, B., & Boileau, M. (1989). Nocturnal penile tumescence monitoring with stamps. Urology, 15, 171.

Beck, A. T. (1963). Thinking and depression. Archives of General Psychiatry, 9, 324-333 (reprinted in New York by the Institute for Rational-Emotive Therapy).

Beck, A. T. (1964). Thinking and depression: 2, Theory and therapy. Archives of General Psychiatry, 10, 561-571.

Beck, A. T. (1967). Depression: Clinical, experimental, and theoretical aspects. New York: Hoeber. (Republished as Depression: Causes and treatment. Philadelphia:

University of Pennsylvania Press, 1972).

Beck, J.G. (1984). The effect of performance demand and attentional focus on sexual responding in functional and dysfunctional men. Unpublished doctoral dissertation, State University of New York at Albany, Albany, New York.

Beck, J.G., & Barlow, D.H. (1984). Current conceptualizations of sexual dysfunction: A review and an alternative perspective. Clinical Psychology Review, 4, 363-378.

Beck, J.G., & Barlow, D.H. (1986). The effects of anxiety and attentional focus on sexual responding-II: Cognitive and affective patterns in erectile dysfunction. Behaviour Research and Therapy, 24, 19-26.

Beck, J.G., Barlow, D.H., & Sakheim, D.K. (1982, August). Sexual arousal and suppression patterns in functional and dysfunctional men. Paper presented at the annual convention of the American Psychological Association, Washington, D.C.

Beck, J.G., Barlow, D.H., & Sakheim, D.K. (1983). The effects of attentional focus and partner arousal on sexual responding in functional and dysfunctional men. Behaviour Research and Therapy, 21, 1-8.

Beck, J.G., Barlow, D.H., Sakheim, D.K., & Abrahamson, D.J. (1984). A cognitive processing account of anxiety and sexual arousal: The role of selective attention, thought content, and affective states. Paper presented at the annual convention of the American Psychological Association, Toronto.

Beck, J.G., Barlow, D.H., Sakheim, D.K., & Abrahamson, D.J. (1987). Shock threat and sexual arousal: The role of selective attention, thought content, and affective states. Psychophysiology, 24, 165-172.

Becker, A.J., Stief, C.G., Machtens, S., Schultheiss, D., Hartmann, U. Truss, M.C., et al. (1998). Oral phentolamine as treatment for erectile dysfunction. Journal of Urology, 159, 1214-1216.

Blackard, C.E., Borkon, W.D., Lima, J.S., et al. (1993). Use of vacuum tumescence device for impotence secondary to venous leakage. Urology, 41, 225.

Blaivas, J.G., Zayed, A.A.H., & Labib, K.B. (1981). The bulbocavernosus reflex in urology: A prospective study of 299 patients. Journal of Urology, 126, 197.

Borenstein, M., Rothstein, H., & Cohen, J. (1997). Sample Power 1.0. Chicago: SPSS, Inc.

Brockner, J. (1979). The effects of self-esteem, success-failure, and self-consciousness on task performance. Journal of Personality and Social Psychology, 37, 1732-1741.

Bruce, T.J., Cerny, J.A., & Barlow, D.H. (1986, November). Spectatoring operationalized: Its influence on sexually functional and dysfunctional men. Paper presented at annual meeting of the Association for the Advancement of Behavior Therapy, Chicago, IL.

Buffum, J. (1982). Pharmacosexology: The effects of drugs on sexual function—A review. Journal of Psychoactive Drugs, 14, 5-44.

Buffum, J. (1986). Pharacosexology update: Prescription drugs and sexual function. Journal of Psychoactive Drugs, 18, 97-106.

Buvat, J., Lemaire, A., Buvat-Herbaut, M., Fourlinnie, J.C., Racadot, A., & Fossati, P. (1985).

Buvat, J., Buvat-Herbaut, M., Lemaire, A., Marcolin, G., and Quittelier, E. (1990). Recent developments in the clinical assessment and diagnosis of erectile dysfunction. Annual Review of Sex Research, 1, 265-308.

Cacioppo, J.T., & Tassinary, L.G. (1990). Inferring psychological significance from physiological signals. American Psychologist, 45, 16-28.

Carey, M.P., Wincze, J.P., & Meisler, A.W. (1993). Sexual dysfunction: Male erectile disorder. In D. Barlow (Ed) Clinical handbook of psychological disorders, (2nd ed., pp. 442-480). New York: Guilford Press.

Carmignani, G., Pirozzi, F., Spano, G., et al. (1987). Cavernous artery revascularization in vasculogenic impotence: New simplified technique. Urology, 30, 23.

Carney, A., Bancroft, J., & Mathews, A. (1978). A combination of hormonal and psychological treatment for female sexual unresponsiveness. British Journal of Psychiatry, 133, 339-346.

Carver, C. S., Blaney, P. H., & Scheier, M. F. (1979). Focus of attention, chronic expectancy, and responses to a feared stimulus. Journal of Personality and Social Psychology, 37, 1186-1195.

Carver, C. S., Peterson, L. M., Follansbee, D. J., & Scheier, M. F. (1983). Effects of self-directed attention on performance and persistence among persons high and low in test anxiety. Cognitive Therapy and Research, 7, 333-354.

Carver, C. S., & Scheier, M. F. (1981). Attention and self-regulation: A control-theory approach to human behavior. New York: Springer-Verlag.

Carver, C. S., & Scheier, M. F. (1988). A control-process perspective on anxiety. Anxiety Research, 1, 17-22.

Condra, M., Fenemore, J., Reid, K., et al. (1987). Screening assessment of penile tumescence and rigidity. Clinical test of snap-gauge. Urology, 29, 254.

Cookson, M.S., & Nadig, P.W. (1993). Long-term results with vacuum constriction device. Journal of Urology, 149, 290.

Cooper, A.J. (1971). Treatments of male potency disorders: The present status. Psychosomatics, 12, 235-244.

Cranston-Cuebas, M., Barlow, D. H., Mitchell, W., & Athanasiou, R. (1993). Differential effects of misattribution on sexually functional and dysfunctional men. Journal of Abnormal Psychology, 102, 525-533.

Cranston-Cuebas, M.A., & Barlow, D.H. (1990). Cognitive and affective contributions to sexual functioning. In J. Bancroft (Ed.), Annual review of sex research: An integrative and interdisciplinary review, vol. 1. (pp. 119-161). Society for Scientific Study of Sex.

Cranston-Cuebas, M.A., Williams, D.J., Mitchell, W., Barlow, D.H., & Jones, J.C. (1989, November). The effects of sensate focus and neutral distraction on male sexual arousal. Paper presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Washington, D.C.

Davidson, J.M., Camargo, C.A., Smith, E.R., & Kwan, M. (1983). Maintenance of sexual function in a castrated man treated with ovarian steroids. Archives of Sexual Behavior, 12, 263-274.

DeAmicis, L., Goldberg, D.C., LoPiccolo, J., Friedman, J., & Davies, L. (1985). Clinical follow-up of couples treated for sexual dysfunction. Archives of Sexual Behavior, 14, 467-489.

DePalma, R.G., Schwab, F.J., Emsellem, H.A., et al. (1990). Noninvasive assessment of impotence. Surgical Clinics of North America, 70, 119.

Diederichs, W., Stief, C.G., Lue, T.F., Tanagho, E.A. (1988). Sympathetic inhibition of papaverine-induced erection. In Proceedings of the sixth biennial international symposium for corpus cavernosum revascularization and third biennial world meeting on impotence (p. 79). Boston, MA: October 6.

Dow, M., & Gallagher, J. (1989). A controlled study of combined hormonal and psychological treatment for sexual unresponsiveness in women. British Journal of Clinical Psychology, 28, 201-212.

Dutton, D.G., & Aron, A.P. (1974). Some evidence for heightened sexual attraction under conditions of high anxiety. Journal of Personality and Social Psychology, 30, 510-517.

Earls, C. M., Quinsey, V. L., & Castonguay, L. G. (1987). A comparison of three methods of scoring penile circumference changes. Archives of Sexual Behavior, 16(6), 493-500.

Ellis, H. (1906). Studies in the psychology of sex. New York: Random House.

Farkas, G. M., Evans, I. M., Sine, L. F., Eifert, G., Wittlieb, E., & Vogelmann-Sine, S. (1979). Reliability and validity of the mercury-in-rubber strain gauge measure of penile circumference. Behavior Therapy, 10, 555-561.

Farkas, G., Sine, L. F., & Evans, I. M. (1979). The effects of distraction, performance demand, stimulus explicitness, and personality on objective and subjective measures of male sexual arousal. Behavior Research and Therapy, 17, 25-32.

Feldman, H.A., Goldstein, I., Hatzichristou, D.G., Krane, R.J., & McKinlay, J.B. (1994). Impotence and its medical and psychosocial correlates: Results of the massachusetts male aging study. Journal of Urology, 151(1), 54-61.

Fichten, C.S., Libman, E., Takefman, J., & Brender, W. (1988). Self-monitoring and self-focus in erectile dysfunction. Journal of Sex and Marital Therapy, 14, 120-128.

Fisher, C., Gross, J., & Zuch, J. (1965). Cycle of penile erection synchronous with dreaming (REM) sleep. Archives of General Psychiatry, 12, 27-45.

Fisher, C., Schiavi, R.C., Edwards, A., et al. (1979). Evaluation of nocturnal penile tumescence in the differential diagnosis of sexual impotence. A qualitative study. Archives of General Psychiatry, 36, 431.

Fitch, W.P. (1990). Three-yearexperience using penile revascularization. Journal of Urology, 143, 318.

Frank, E., Anderson, C., & Kupfer, D.J. (1976). Profiles of couples seeking sex therapy and marital therapy. American Journal of Psychiatry, 133, 559-562.

Gagnon, J.H. (1990). The explicit and implicit use of the scripting perspective in sex research. In J. Bancroft, C.M. Davis, & D. Weinstein (Eds.), Annual review of sex research: An integrative and interdisciplinary review, vol. 1 (pp. 1-43). Lake Mills, IA: The Society for the Scientific Study of Sex.

Geer, J. H., & Fuhr, R. (1976). Cognitive factors in sexual arousal: The role of distraction. Journal of Consulting and Clinical Psychology, 44, 238-243.

Geer, J. H., & Head, S. (1990). The sexual response system. In J. T. Cacioppo & L. G. Tassinary (Eds.), Principles of psychophysiology (pp. 599-630). New York: Cambridge University Press.

Gilbert, H.W., & Gingell, J.C. (1992). Vacuum constriction devices: Second-line conservative treatment for impotence. British Journal of Urology, 70, 81.

Goldstein, I. (1986). Arterial revascularization procedures. Seminal Urology, 4, 252.

Goldstein, I., Levine, F., Gasior, B., et al. (1990). Role of vascular reconstructive surgery in impotence: A review of 335 patients over 7 years. Journal of Urology, 143, 318.

Goldstein, I., Lue, T.F., Padma-Nathan, H., Rosen, R.C., Sters, W.D., Wicker, P.A. (1998). Oral sildenafil in the treatment of erectile dysfunction. New England Journal of Medicine, 338, 1397-1404.

Gwinup, G. (1988). Oral phentolamine in nonspecific erectile insufficiency. Annals of Internal Medicine, 109, 162-163.

Hawton, K. (1982). The behavioural treatment of sexual dysfunction. British Journal of Psychiatry, 140, 94-101.

Hawton, K. (1992). Sex therapy research: Has it withered on the vine? Annual Review of Sex Research, 3, 49-72.

Hawton, K., Catalan, J., Martin, P., & Fagg, J. (1986). Long-term outcome of sex therapy. Behaviour Research and Therapy, 24, 665-675.

Hawton, K., Catalan, J., & Fagg, J. (1992). Sex therapy for erectile dysfunction: Characteristics of couples, treatment outcome, and prognostic factors. Archives of Sexual Behavior, 21(2), 161-175.

Heiman, J.R., & Rowland, D.L. (1983). Affective and physiological sexual response patterns: The effects of instructions on sexually functional and dysfunctional men. Journal of Psychosomatic Research, 27, 105-116.

Heller, L., Keren, O., Aloui, R., et al. (1992). An open trial of vacuum penile tumescence: Constriction therapy for neurological impotence. Paraplegia, 30, 550.

Henson, D.E., & Rubin, H.B. (1971). Voluntary control of eroticism. Journal of Applied Behavior Analysis, 4, 37-44.

Hoon, P., Wincze, J., & Hoon, E. (1977). A test of reciprocal inhibition: Are anxiety and sexual arousal in women mutually inhibitory? Journal of Abnormal Psychology, 86, 65-74.

Hurlbert, D.F., Apt, C., Gasar, S., Wilson, N.E., & Murphy, Y. (1994). Sexual narcissism: A validation study. Journal of Sex and Marital Therapy, 20, 24-34.

Janssen, E., Everaerd, W., Lunsen, R.H.W. van, & Oerlemans, S. (1994a). Validation of a psychophysiological waking erectile assessment (WEA) for the diagnosis of male erectile disorder. Urology, 43, 686-695.

Janssen, E., Everaerd, W., Lunsen, R.H.W. van, & Oerlemans, S. (1994b). Visual stimulation facilitates penile responses to vibration in men with and without erectile disorder. Journal of Consulting and Clinical Psychology, 62, 1222-1228.

Jevtich, M.J. (1980). Importance of penile arterial pulse sound examination in impotence. Journal of Urology, 124, 820-824.

Johnson, J. (1968). Disorders of sexual potency in the male. Elmsford, NY: Pergamon Press.

Jones, T.M. (1985). Hormonal considerations in the evaluation and treatment of erectile dysfunction. In R.T. Segraves & H.W. Schoeberg (Eds.), Diagnosis and treatment of erectile disturbances: A guide for the clinician (pp. 115-158). New York: Plenum.

Jones, J. C., Bruce, T. J., & Barlow, D. H. (1986, November). Effects of four levels of "anxiety" on the sexual arousal of sexually functional and dysfunctional men. Paper presented at the annual convention of the Association for Advancement of Behavior Therapy, Chicago, IL.

Kaplan, H.S. (1974). The new sex therapy. New York: Brunner/Mazel.

Kaplan, H.S. (1979). Disorders of sexual desire. New York: Brunner/Mazel.

Kelly, M.P., Strassberg, D.S., & Kircher, J.R. (1990). Attitudinal and experiential correlates of anorgasmia. Archives of Sexual Behavior, 19, 165-172.

Kim, N., Vardi, Y., Padma-Nathan, H., et al. (1993). Oxygen tension regulates the nitric oxide pathway: Physiological role in penile erection. Journal of Clinical Investigation, 91, 437.

Kinsey, A.C., Pomeroy, W.B., Martin, C.E., et al. (1953). Sexual behavior in the human female. Philadelphia: WB Saunders Co.

Kolodny, R.C. (1981). Evaluating sex therapy: Process and outcome at the masters & johnson institute. The Journal of Sex Research, 17(4), 301-318.

Konnak, J.W., & Ohl, D.A. (1989). Microsurgical penile revascularization using the central corporeal penile artery. Journal of Urology, 142, 305.

Korenman, S.G., & Viosca, S.P. (1992). Use of a vacuum tumescence device in the management of impotence in men with a history of penile implant or severe pelvic disease. Journal of the American Geriatric Society, 40, 61.

Korenman, S.G., Viosca, S.P., Kaiser, F.E., et al. (1990). Use of a vacuum tumescence device in the management of impotence. Journal of the American Geriatric Society, 38, 217.

Krane, R.J., Goldstein, I., & Tejada, I.S. (1989). Medical progress: Impotence. The New England Journal of Medicine, 321:24, 1648-1659.

Lakin, M.M., Montague, D.K., Vander Brug Medendorp, S., et al. (1990). Intercavernous injection therapy: Analysis of results and complications. Journal of Urology, 143, 1138.

Lange, J.D., Wincze, J.P., Zwick, W., Feldman, S., & Hughes, P. (1981). Effects of demand for performance, self-monitoring of arousal, and increased sympathetic nervous system activity on male erectile response. Archives of Sexual Behavior, 10, 443-463.

Laumann, E.O., Paik, A., & Rosen, R.C. (1999). Sexual dysfunction in the United States: Prevalence and predictors. Journal of the American Medical Association, 281(6), 537-544.

Lavoisier, P., Proulx, J., Courtois, F., et al. (1989). Bulbocavernous reflex: Its validity as a diagnostic test of neurogenic impotence. Journal of Urology, 141, 311.

Laws, D. R. (1977). A comparison of the measurement characteristics of two circumferential penile transducers. Archives of Sexual Behavior, 6(1), 45-51.

Laws, D.R., & Rubin, H.B. (1969). Instructional control of an autonomic response. Journal of Applied Behavioral Analysis, 2, 93-99.

Leeming, A.E, & Brown, P.T. (1988). The psychological basis of sexual dysfunction, in: M. Cole & W. Dryden (Eds) Sexual Therapy in Britain. Oxford: Oxford University Press.

Leeming, A., & Brown, P. (1992). An eclectic or integrative approach to sex therapy? Sexual and Marital Therapy, 7(3), 283-293.

Lewis, R.W. (1991). Venous surgery for impotence. Urologic Clinics of North America, 15, 115-121.

Libman, E., Fichten, C.S., Creti, L., Weinstein, N., Amsel, R., & Brender, W. (1989). Sleeping and waking-state measurement of erectile function in an aging male population. Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1, 284-291.

Lief, H.I. (1977). Inhibited sexual desire. Medical Aspects of Human Sexuality, 7, 94-95.

LoPiccolo, J. (1992). Postmodern sex therapy for erectile failure. In R.C. Rosen & S.R. Leiblum (Eds.), Erectile disorders: Assessment and treatment (pp. 171-197). New York: Guilford Press.

LoPiccolo, J., & LoPiccolo, L. (1978). Handbook of sex therapy. New York: Plenum.Masters, W., & Johnson, V. (1970). Human sexual inadequacy. Boston: Little, Brown.

Lue, T.F. (1990). Intercavernous drug administration: Its role in diagnosis and treatment of impotence. Seminal Urology, 8, 100.

Lue, T.F., & Tanagho, E.A. (1987). Physiology of erection and pharmacological management of impotence. Journal of Urology, 137, 829-836.

Lue, T.F., Hricak, H., Schmidt, A., & Tanagho, E.A. (1986). Functional evaluation of penile veins by cavernosography and cavernosometry in papaverine induced erections. Journal of Urology, 135, 479-482.

Lue, T.F., & Tanagho, E.A. (1988). Functional anatomy and mechanism of penile erection. In (E.A. Tanagho, T.F. Lue, & R.D. McClure, Eds.), Contemporary management of impotence and infertility, (pp. 39-50). Baltimore: Williams & Wilkins.

Marshall, P., Surridge, D., & Delva, N. (1981). The role of nocturnal penile tumescence in differentiating between organic and psychogenic impotence. Archives of Sexual Behavior, 10, 1.

Marshall, P.G., Earls, C., Morales, A., et al. (1982). Nocturnal penile tumescence recording with stamps: A validity study. Journal of Urology, 128, 946.

Marshall, P.G., Morales, A., Phillips, P., et al. (1983). Nocturnal penile tumescence with stamps: A comparative study under sleep laboratory conditions. Journal of Urology, 130, 88.

Masters, W.H., & Johnson, V.E. (1966). Human sexual response. Boston: Little, Brown.

Masters, W.H., & Johnson, V.E. (1970). Human sexual inadequacy. Boston: Little, Brown.

Masters, W.H., Johnson, V.E., & Kolodny, R.C. (1994). Heterosexuality. New York: HarperCollins.

McAnulty, R. D., & Adams, H. E. (1991). Voluntary control of penile tumescence: Effects of an incentive and a signal detection task. The Journal of Sex Research, 28, 557-577.

McDougal, W.S., & Jeffrey, R.F. (1983). Microscopic penile revascularization. Journal of Urology, 129, 517.

Meinhardt, W., Lycklama, A.A.B., Kropman, R.F., et al. (1993). The negative pressure device for erectile disorders: When does it fail? Journal of Urology, 149, 1285.

Meisler, A.W., Carey, M.P., Lantinga, L.J., & Krauss, D.J. (1989). Erectile dysfunction in diabetes mellitus: A biopsychosocial approach to etiology and assessment. Annals of Behavioral Medicine, 11, 18-27.

Morales, A., Condra, M., Owen, J.A., et al. (1987). Is yohimbine effective in the treatment of organic impotence? Journal of Urology, 137, 1168.

Morales, A., Condra, M., & Reid, K. (1990). The role of nocturnal penile tumescence monitoring in the diagnosis of impotence: A review. Journal of Urology, 143, 441.

Moul, J.W., & McLeod, D.G. (1989). Negative pressure devices in the explanted penile prosthesis population. Journal of Urology, 142, 729.

Mulligan, T., & Schmitt, B. (1993). Testosterone for erectile failure. Journal of General Internal Medicine, 8, 517.

NIH Consensus Statement Online. (1992, December 7-9). 10(4): 1-31.

Nogueira, M.C., Herbaut, A.G., & Wespes, E. (1990). Neurophysiological investigations of two hundred men with erectile dysfunction. European Urology, 18, 37.

O'Keefe, M., & Hunt, D.K. (1995). Assessment and treatment of impotence. Medical Clinics of North America, 79:2, 415-433.

Padma-Nathan, H., Hellstrom, W.J.G., Kaiser, F.E., et al. (1997). Treatment of men with erectile dysfunction with transurethral alprostadil. The New England Journal of Medicine, 336, 1-6.

Palace, E. M. (1995a). Modification of dysfunctional patterns of sexual response through autonomic arousal and false physiological feedback. Journal of Consulting and Clinical Psychology, 63, 604-615.

Palace, E. M. (1995b). A cognitive-physiological process model of sexual arousal and response. Clinical Psychology: Science and Practice, 2(4), 370-384.

Palace, E. M., & Gorzalka, B. B. (1990). The enhancing effects of anxiety on arousal in sexually dysfunctional and functional women. Journal of Abnormal Psychology, 99, 403-411.

Palace, E.M., & Gorzalka, B.B. (1992). Differential patterns of arousal in sexually functional and dysfunctional women: Physiological and subjective components of sexual response. Archives of Sexual Behavior, 21, 135-159.

Papadopoulos, C. (1989). Sexual aspects of cardiovascular disease. New York: Praeger.

Papp, G.Y., Hoznek, A., Juhasz, E., et al. (1991). Vacuum therapy in the treatment of erectile impotence. Acta Chir Hung, 32, 331.

Pearl, R.M., & McGhee, R.D. (1987). Penile revascularization in the treatment of vasculogenic impotence. Plastic Reconstruction Surgery, 80, 284.

Petrou, S.P., & Barrett, D.M. (1990). The use of penile prosthesis in erectile dysfunction. Seminal Urology, 8, 138.

Proulx, J., Cote, G., Achille, P. A. (1993). Prevention of voluntary control of penile response in homosexual pedophiles during phallometric testing. The Journal of Sex Research, 30, 140-147.

Quinsey, V. L., & Chaplin, T. C. (1988). Preventing faking in phallometric assessments of sexual preference. Annals of the New York Academy of Sciences, 528, 49-58.

Renshaw, D.C. (1988). Profile of 2376 patients treated at Loyola Sex Clinic between 1972 and 1987. Sexual and Marital Therapy, 3, 111-117.

Rich, A. R., & Woolever, D. K. (1988). Expectancy and self-focused attention: Experimental support for the self-regulation model of test anxiety. Journal of Social and Clinical Psychology, 7, 246-259.

Roose, S.P., Glassman, A.H., Walsh, B.T., et al. (1982). Reversible loss of nocturnal penile tumescence during depression: A preliminary report. Neuropsychobiology, 8, 284.

Rosen, R.C., & Leiblum, S.R. (1992). Erectile disorders: Assessment and treatment. New York: Guilford Press.

Rosen, R.C., & Leiblum, S.R. (1995). Hypoactive sexual desire. Psychiatric Clinics of North America, 18, 107-121.

Rosen, R.C., Leiblum, S.R., & Spector, I. (1994). Psychologically based treatment for male erectile disorder: A cognitive-interpersonal model. Journal of Sex and Marital Therapy, 20, 67-85.

Ruzbarsky, V., & Michal, V. (1977). Morphologic changes in the arterial bed of the penis with aging: Relationship to the pathogenesis of impotence. Investigative Urology, 15, 194-199.

Saenz de Tejada, I., Goldstein, I., Blanco, R., Cohen, R.A., & Krane, R.J. (1985). Smooth muscle of the corpora cavernosae: Role in penile erection. Surgical Forum, 36, 623-624.

Sakheim, D., Barlow, D.H., Abrahamson, D.J., & Beck, J.G. (1987). Distinguishing between organogenic and psychogenic erectile dysfunction. Behaviour Research and Therapy, 25, 379-390.

Salmimies, P., Kockott, G., Pirke, K.M., Vogt, H.J., & Schill, W.B. (1982). Effects of testosterone replacement on sexual behavior in hypogonadal men. Archives of Sexual Behavior, 11, 345-353.

Sarramon, J.P., Rischman, P., Lemba, N., et al. (1990). Microsurgery reconstruction for pure vascular impotence. Journal of Urology, 143, 303.

Sbrocco, T., & Barlow, D. H. (1996). Conceptualizing the cognitive component of sexual arousal: Implications for sexuality research and treatment. In P. Sulkouskis (Ed.), Frontiers of Cognitive Therapy. Guilford.

Schover, L.R., & Leiblum, S.R. (1994). The stagnation of sex therapy. Journal of Psychology and Human Sexuality, 6, 5-30.

Schover, L.R., & Jensen, S.B. (1988). Sexuality and chronic illness: A comprehensive approach. New York: Guilford Press.

Schwartz, A.N., Lowe, M.A., Ireton, R., et al. (1990). A comparison of penile brachial index angiography: Evaluation of corpora cavernosa arterial inflow. Journal of Urology, 143, 510.

Seftel, A.D., & Saenz de Tejada, I. (1991). Physiologic control of penile microvessels. Paper presented at the Society of Basic Urologic Research: American Urological Association Annual Meeting, Toronto.

Segraves, R.T. (1989). Effects of psychotropic drugs on human erection and ejaculation. Archives of General Psychiatry, 46, 275-284.

Segraves, R.T., Madsen, R., Carter, C.S., & Davis, J.M. (1985). Erectile dysfunction associated with pharmacological agents. In R.T. Segraves & H.W. Schoenberg (Eds.), Diagnosis and treatment of erectile disturbances: A guide for clinicians (pp. 23-63). New York: Plenum.

Shaw, W.W., & Zorgniotti, A.W. (1984). Surgical techniques in penile revascularization. Urology, 23, 76.

Sidi, A.A., Becher, E.F., Zhang, G., et al. (1990). Patient acceptance of and satisfaction with an external negative pressure device for impotence. Journal of Urology, 144, 1154.

Sidi, A.A., & Lewis, J.G. (1992). Clinical trial of a simplified vacuum erection device for impotence treatment. Urology, 39, 526.

Simpson, W.S., & Ramberg, J.A. (1992). Sexual dysfunction in married female patients with anorexia and bulimia nervosa. Journal of Sex and Marital Therapy, 18, 44-54.

Slapion, M. J., & Carver, C. S. (1981). Self-directed attention and facilitation of intellectual performance among persons high in test anxiety. Cognitive Therapy and Research, 5, 115-121.

Soukhanov, A.H. (Ed.) (1994). Webster's II: New riverside university dictionary. Boston: Riverside Publishing Company.

Spector, I.P., & Carey, M.P. (1990). Incidence and prevalence of the sexual dysfunctions: A critical review of the literature. Archives of Sexual Behavior, 19, 389-408.

Takefman, J., & Brender, W. (1984). An analysis of the effectiveness of two components in the treatment of erectile dysfunction. Archives of Sexual Behavior, 13(4), 321-340.

Thorner, N.O., Vance, M.L., Horvath, E., et al. (1992). The anterior pituitary. In Wilson, J.D., & Foster, D.W. (Eds.): Williams' textbook of endocrinology, ed. 8. Philadelphia: W.B. Saunders, p. 221.

Turner, L.A., & Althof, S.E. (1992). The clinical effectiveness of self injection and external vacuum devices in the treatment of erectile dysfunction: A six month comparison. Psychiatric Medicine, 10, 283.

Turner, L.A., Althof, S.E., Levine, S.B., et al. (1990). Treating erectile dysfunction with external vacuum devices: Impact upon sexual, psychological and marital functioning. Journal of Urology, 144, 79.

Van Thillo, E.L., & Delaere, K.P.J. (The vacuum erection device: A non-invasive treatment for impotence. Acta Urol Belg, 60, 9.

Van Nueten, J., Verheyden, B., & Van Camp, K. (1992). Role of penile nocturnal tumescence and rigidity measurement in the diagnosis of erectile impotence. European Urology, 22, 119.

Viglietta, M.B. (1982). The effects of anxiety versus distraction on sexual arousal in males. Unpublished doctoral dissertation, State University of New York at Albany, Albany, New York.

Virag, R., Zwang, G., Dermange, H., et al. (1981). Vasculogenic impotence: A review of 92 cases with 54 surgical operations. Vascular Surgery, 15, 9.

Virag, R., Showkry, K., Floresco, J., et al. (1991). Intercavernous self-injection of vasoactive drugs in the treatment of impotence: 8-year experience with 615 cases. Journal of Urology, 145, 287.

Wagner, G., & Metz, P. (1981). Arteriosclerosis and erectile failure. In G. Wagner & R. Green (Eds.), Impotence: Physiological, psychological, surgical diagnosis and treatment (pp. 63-72). New York: Plenum.

Wespes, E., & Schulman, C. (1993). Venous impotence: Pathophysiology, diagnosis and treatment. Journal of Urology, 149, 1238.

Williams, G., Mulcahy, M.J., Hartnell, G., & Kiely, E. (1988). Diagnosis and treatment of venous leakage: A curable cause of impotence. British Journal of Urology, 61, 151-155.

Wincze, J.P., Bansal, S., Malhotra, C.M., Balko, A., Susset, J.G., & Malamud, M.A. (1988). A comparison of nocturnal penile tumescence and penile response to erotic stimulation during

waking states in comprehensively diagnosed groups of males experiencing erectile difficulties. Archives of Sexual Behavior, 17, 333-348.

Wincze, J.P. & Carey, M.P. (1991). Sexual dysfunction: A guide for assessment and treatment. New York: Guilford Press.

Wine, J. D. (1980). Cognitive-attentional theory of test anxiety. In I. G. Sarason (Ed.), Test anxiety: Theory, research, and application. Hillsdale, NJ: Erlbaum.

Wine, J. D. (1982). Evaluation anxiety: A cognitive-attentional construct. In H. W. Krohne & L. C. Laux (Eds.), Achievement, stress, and anxiety. Washington, DC: Hemisphere.

Wolchik, S. A., Beggs, V., Wincze, J. P., Sakheim, D. K., Barlow, D. H., & Mavissakalian, M. (1980). The effects of emotional arousal on subsequent sexual arousal in men. Journal of Abnormal Psychology, 89, 595-598.

Wolpe, J. (1958). Psychotherapy by reciprocal inhibition. Stanford, CA: Stanford University Press.

Zilbergeld, B. (1978). Male sexuality. New York: Bantam.

Zilbergeld, B. (1992). The new male sexuality. New York: Bantam.

Zorgniotti, A.W. (1994). Experience with buccal phentolamine mesylate for impotence. International Journal of Impotence Research, 6, 37-41.

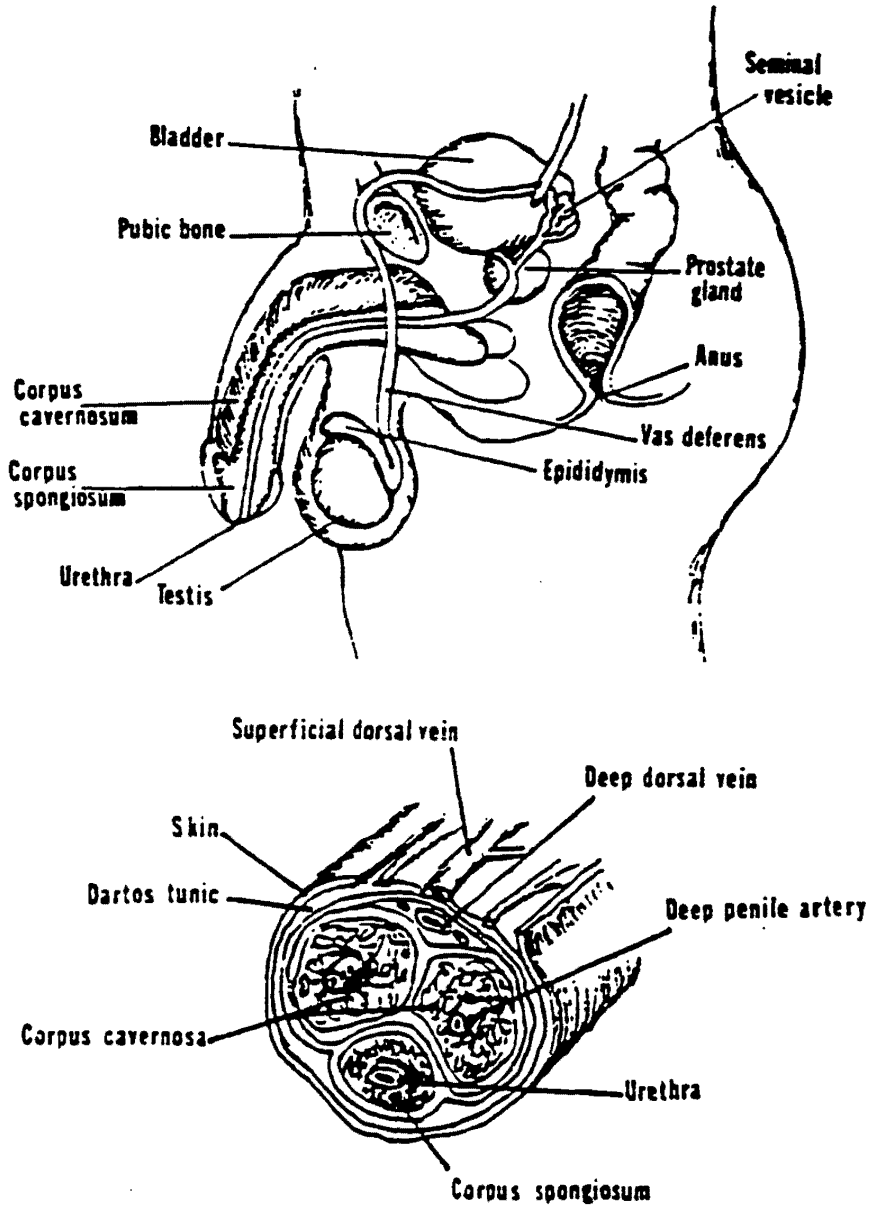

Figure 1. Cross section of male pelvic region and cross section of penis. From "The Sexual Response System," by J. H. Geer and S. Head, 1990, in J. T. Cacioppo & L. G. Tassinary (Eds.), Principles of psychophysiology (p. 604), New York: Cambridge University Press.

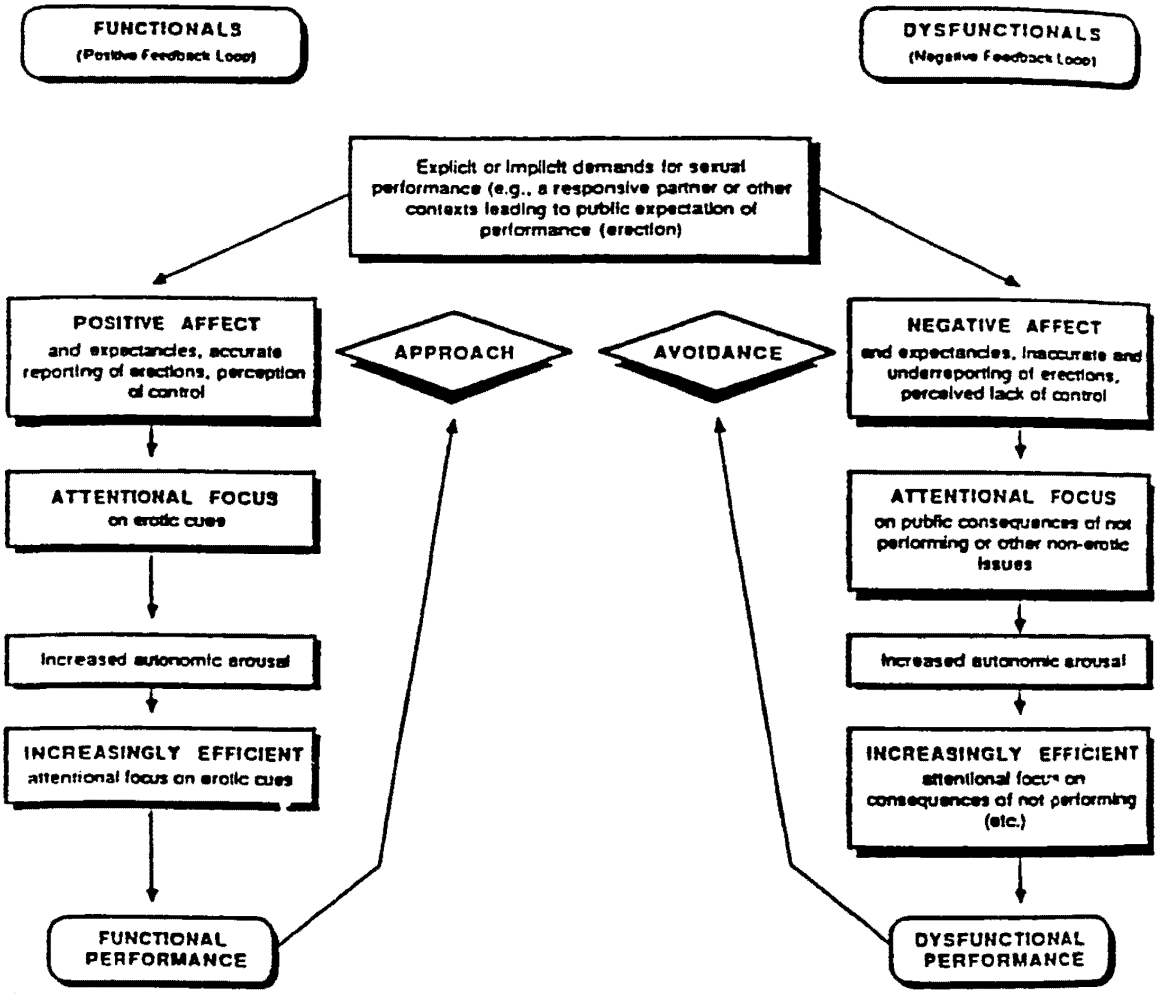

Figure 2. Barlow's (1986, 1988) model of functional and dysfunctional sexual performance. From "Causes of Sexual Dysfunction: The Role of Anxiety and Cognitive Interference," by D. H. Barlow, 1986, Journal of Consulting and Clinical Psychology, 54, p. 146.

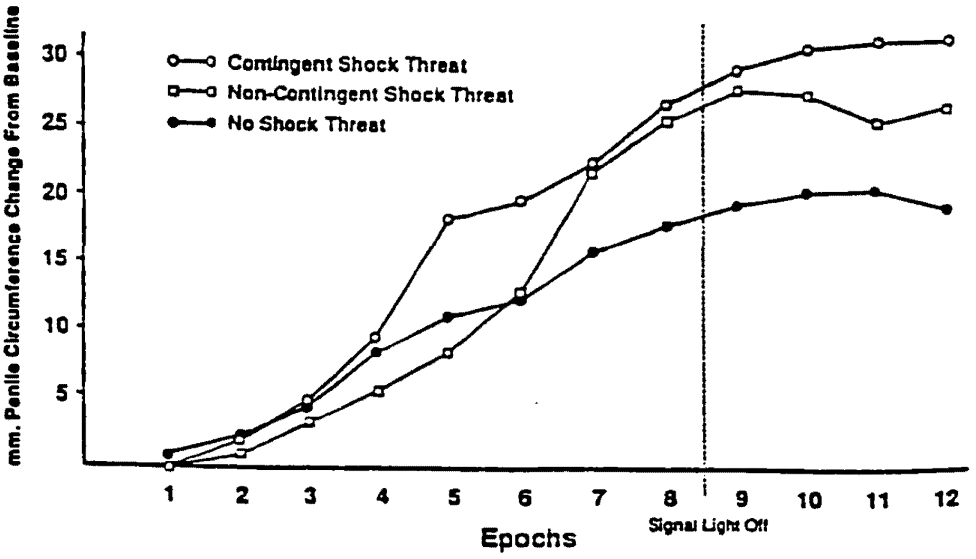

Figure 3. Mean penile circumference change per 15-second epoch during each of three conditions: No-shock threat, noncontingent shock threat, and contingent shock threat. From "Anxiety Increases Sexual Arousal," by D. H. Barlow, D. Sakheim, and J. G. Beck, 1983, Journal of Abnormal Psychology, 92, p. 52.

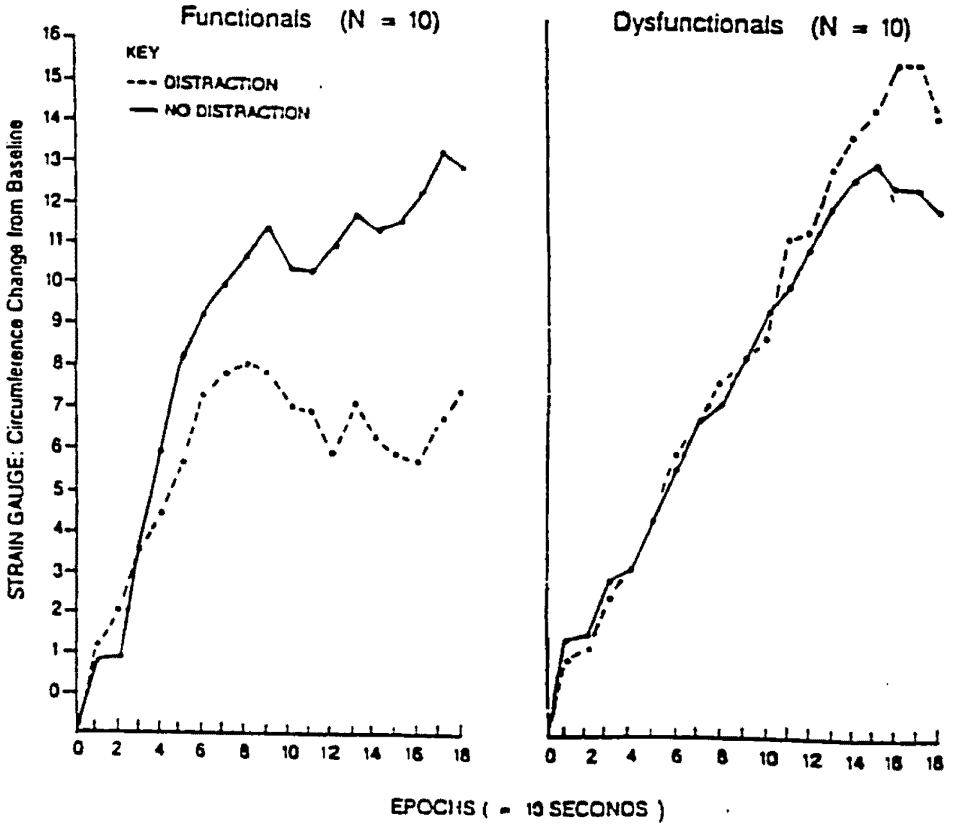

Figure 4. Mean strain gauge response across subjects by epoch during distraction and no distraction: sexually functional versus sexually dysfunctional subjects. From "Effects of Distraction on Sexual Responding in Functional and Dysfunctional Men," by D. J. Abrahamson, D. H. Barlow, D. K. Sakheim, J. G. Beck, and R. Athanasiou, 1985, Behavior Therapy, 16.

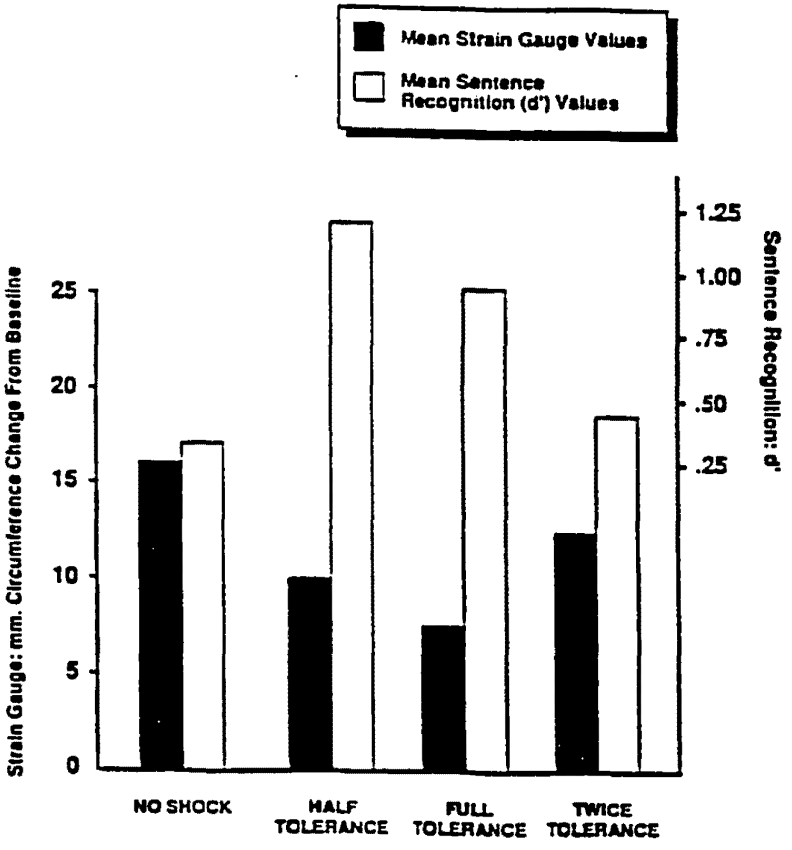

Figure 5. Mean strain gauge response averaged across stimulus duration, and mean sentence recognition values, during four shock threat conditions. From "Shock Threat and Sexual Arousal: The Role of Selective Attention, Thought Content, and Affective States," by J. G. Beck, D. H. Barlow, D. K. Sakheim, and D. J. Abrahamson, 1987,. Psychophysiology, 24, p. 169.

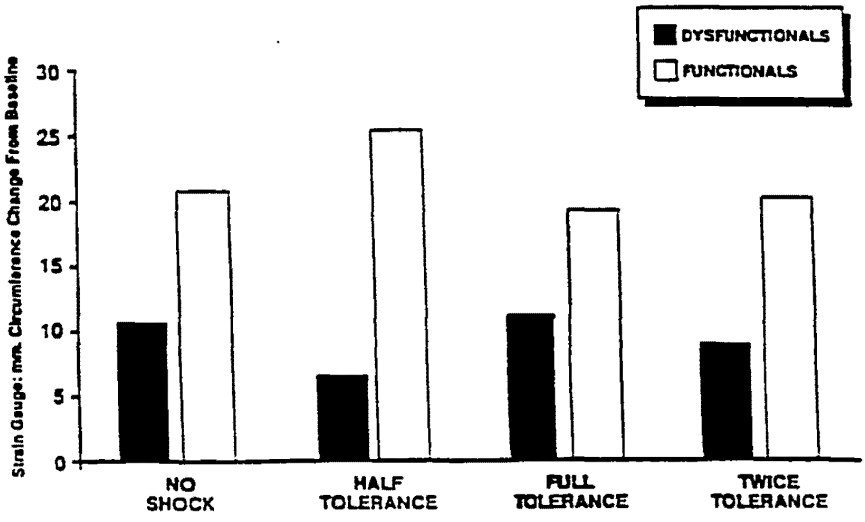

Figure 6. Mean strain gauge responses, averaged across stimulus duration, during four shock threat conditions. From "Effects of Four Levels of 'Anxiety' on the Sexual Arousal of Sexually Functional and Dysfunctional Men," by J. C. Jones, T. J. Bruce, and D. H. Barlow, 1986, November, paper presented at the annual convention of the Association for Advancement of Behavior Therapy, Chicago, IL.

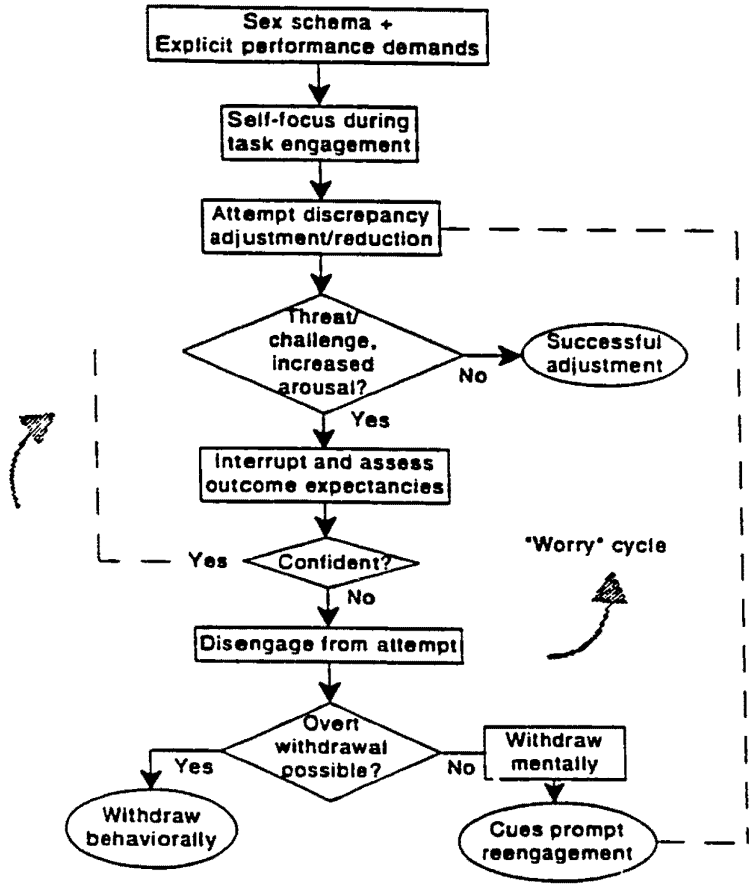

Figure 7. A self-regulatory model of sexual arousal. Model depicts an integrated conceptualization of mechanisms accounting for functional and dysfunctional performance. From "A Control-Process Perspective on Anxiety," by C. S. Carver, and M. F. Scheier, 1988, Anxiety Research, 1.

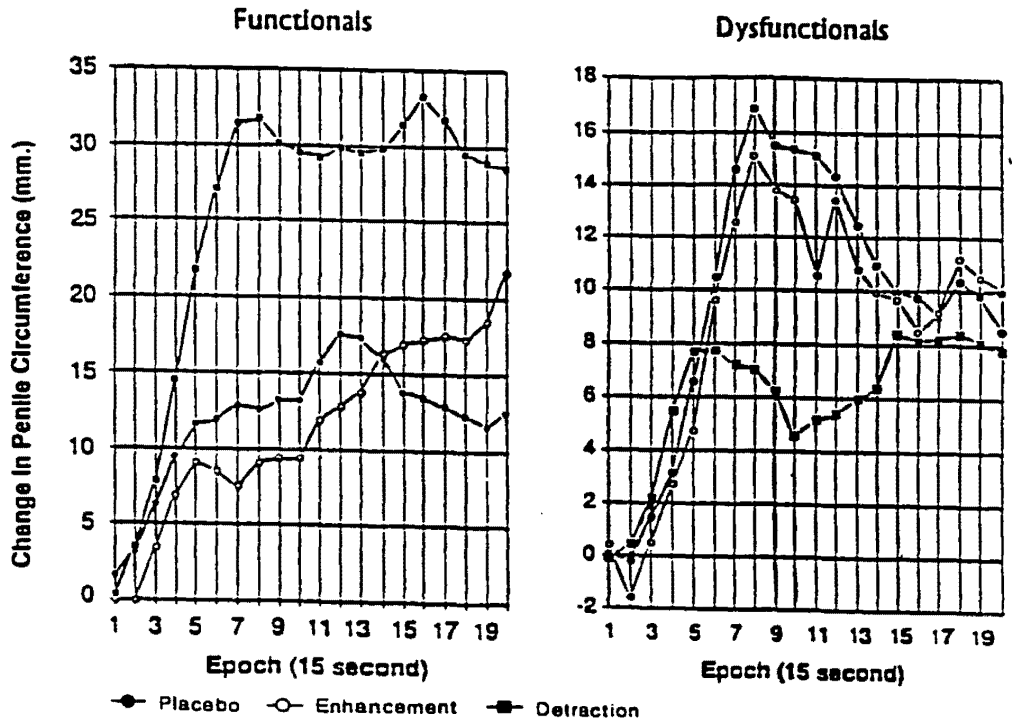

Figure 8. Mean change in penile circumference across subjects (functional and dysfunctional) by epoch across three conditions (placebo, enhancement, distraction). From "Differential Effects of Misattribution on Sexually Functional and Dysfunctional Men," by M. Cranston-Cuebas, D. H. Barlow, W. Mitchell, and R. Athanasiou, 1993, Journal of Abnormal Psychology, 102, p. 528.

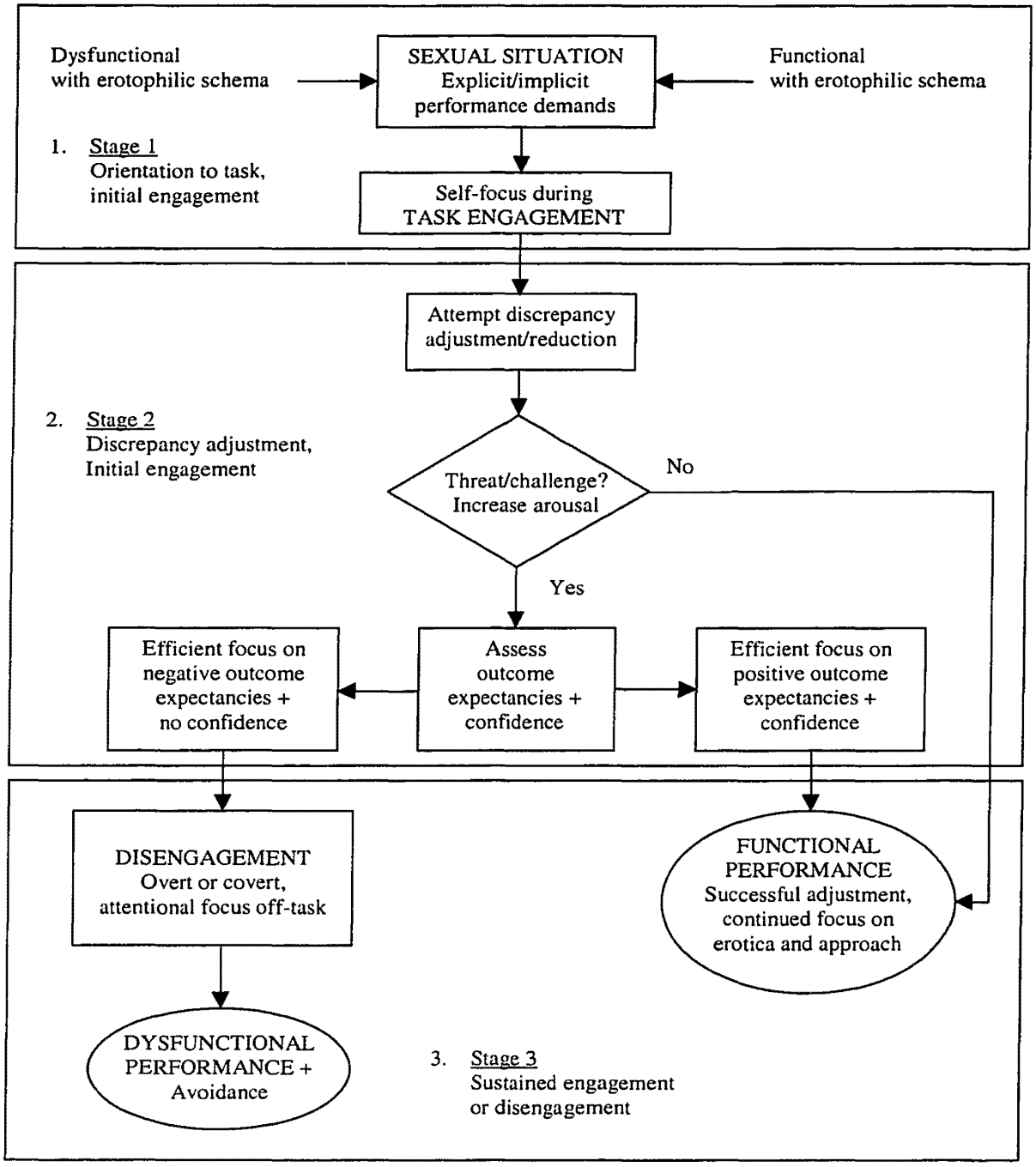

Figure 9. A model of sexual dysfunction: implications for examining attentional processes. From "Conceptualizing the Cognitive Component of Sexual Arousal: Implications for Sexuality Research and Treatment," by T. Sbrocco, and D. H. Barlow, 1996, in P. Sulkouskis (Ed.), Frontiers of Cognitive Therapy, p. 440, Guilford.

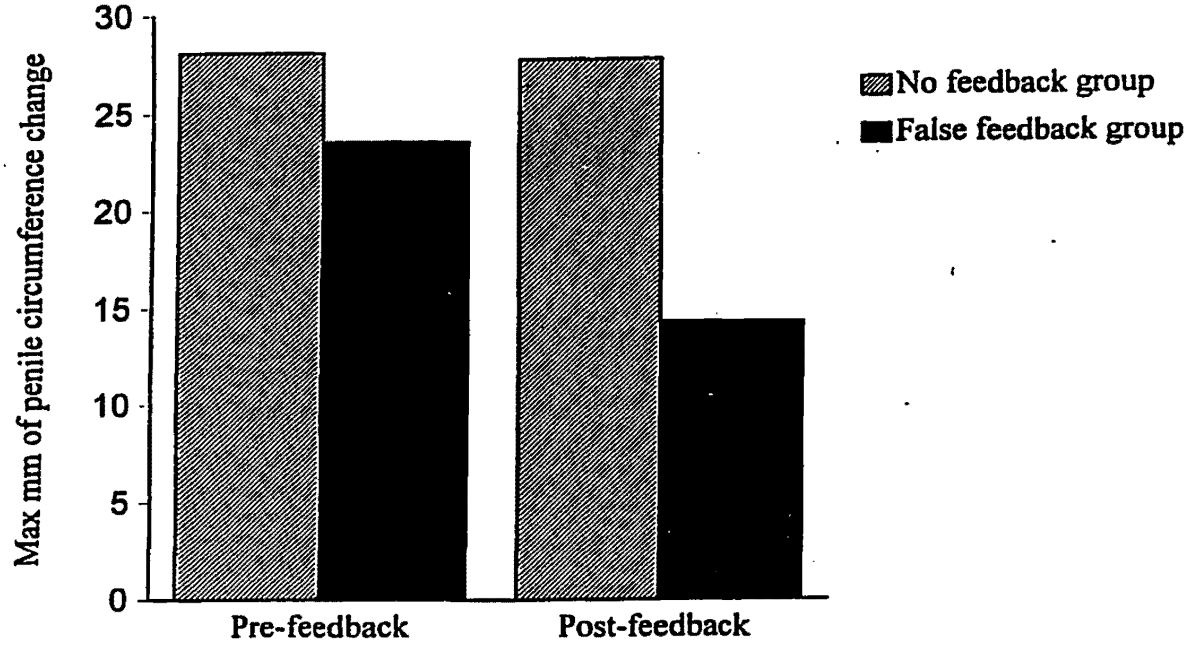

Figure 10. Pre-feedback and post-feedback measures of average maximum change in penile circumference. Pre-feedback measures are based on the average responses across Films 1 and 2. Post-feedback measures are based on responses during Film 3. From "Efficacy Expectancies and Male Sexual Arousal: The Effects of False Negative Feedback on Sexually Functional Males," by A. K. Bach, T. A. Brown, and D. H. Barlow, 1997, November, paper presented at the annual convention of the Association for Advancement of Behavior Therapy, Miami Beach, Fl.

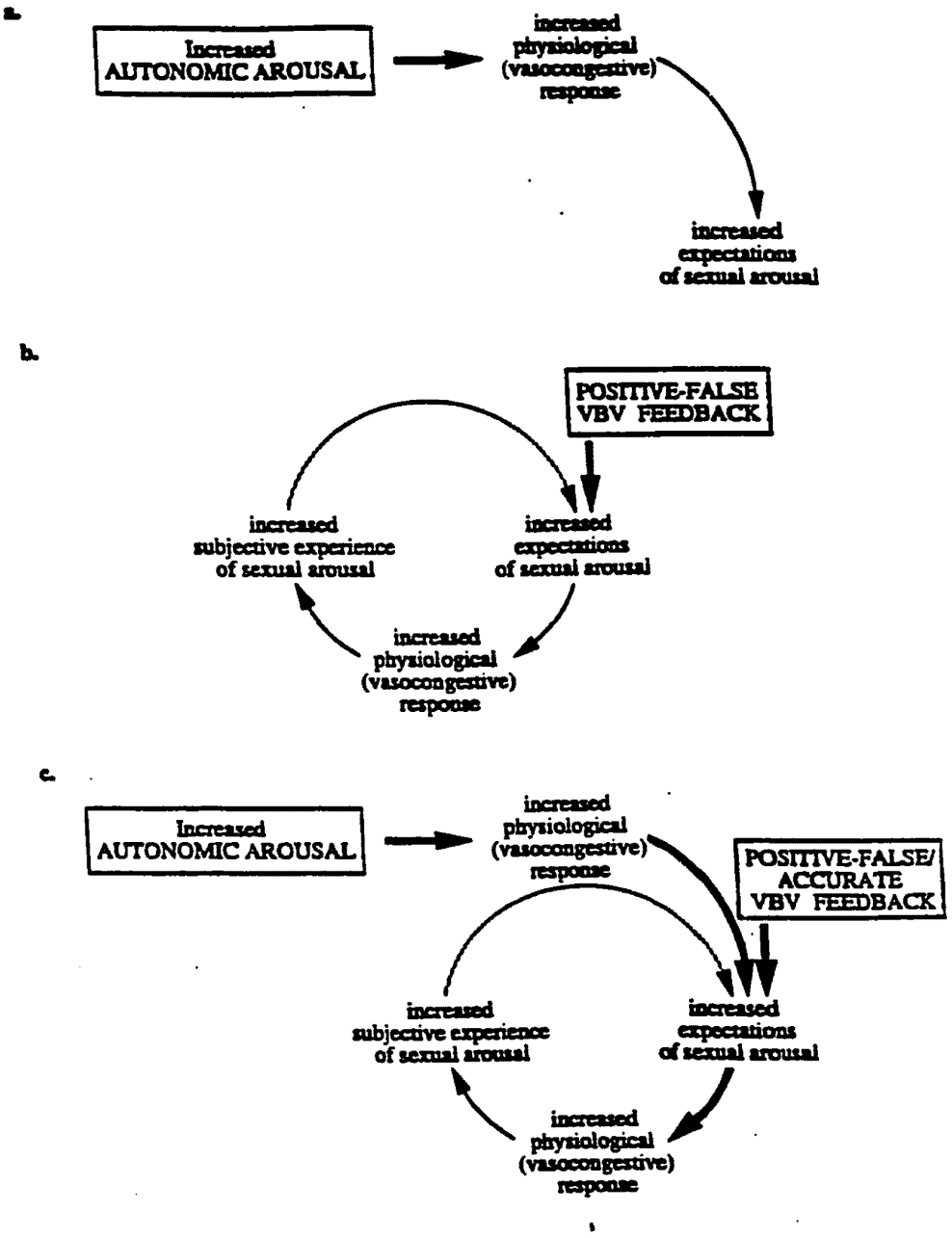

Figure 11. Processes by which cognitive and physiological response components interact to mediate sexual arousal. Process flow diagrams show the results for each condition in the Palace (1995a) study: a) process by which increased autonomic arousal enhances sexual arousal (autonomic arousal-erotic [A-E], no-feedback group); b) process by which positive-false vaginal blood volume (VBV) feedback enhances sexual arousal (neutral-erotic [N-E], false-feedback group); c) process by which increased autonomic arousal combined with positive-false VBV feedback (A-E, false-feedback group; indicated with bold arrows), and proposed process by which increased autonomic arousal combined with accurate VBV feedback, reverses the dysfunctional process and initiates a positive feedback loop of sexual arousal. From "A Cognitive-Physiological Process Model of Sexual Arousal and Response," by E. M. Palace, 1995b, Clinical Psychology: Science and Practice, 2(4), p. 378.

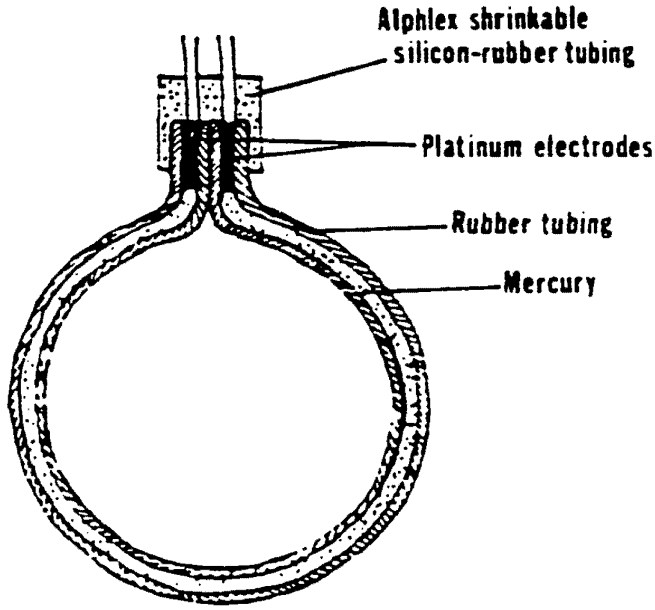

Figure 12. Schematic diagram of mercury-in-rubber strain gauge. From "The Sexual Response System," by J. H. Geer and S. Head, 1990, in J. T. Cacioppo & L. G. Tassinary (Eds.), Principles of psychophysiology (p. 612), New York: Cambridge University Press.

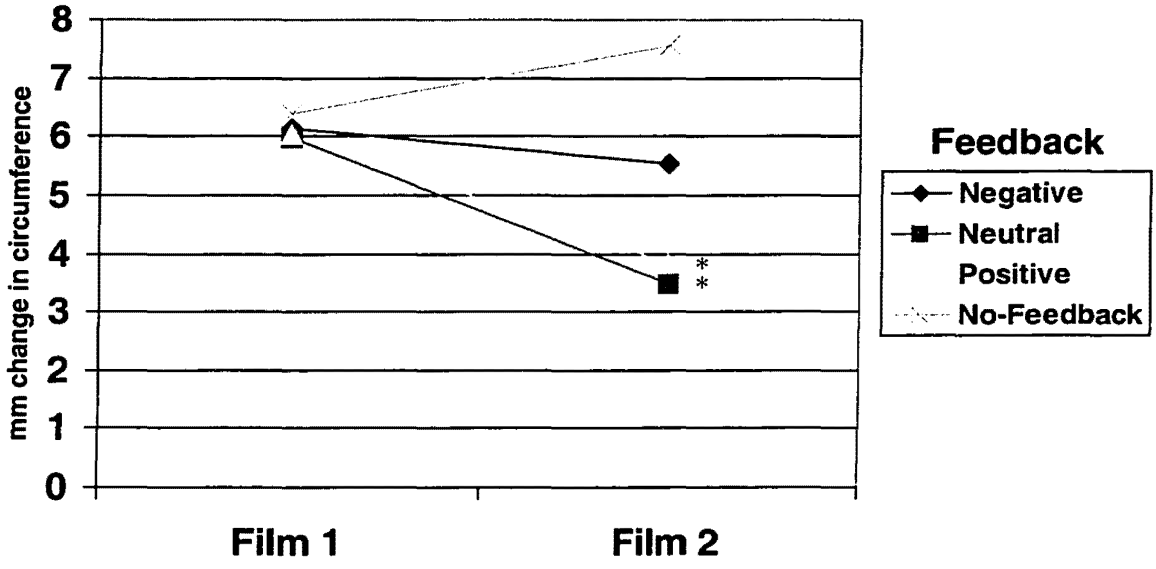

Figure 13. Mean strain gauge responses, averaged across stimulus duration, during four feedback conditions during Film 1 and Film 2 for the dysfunctional subjects.

*Significant difference between Film 1 and Film 2 ($p < .05$).

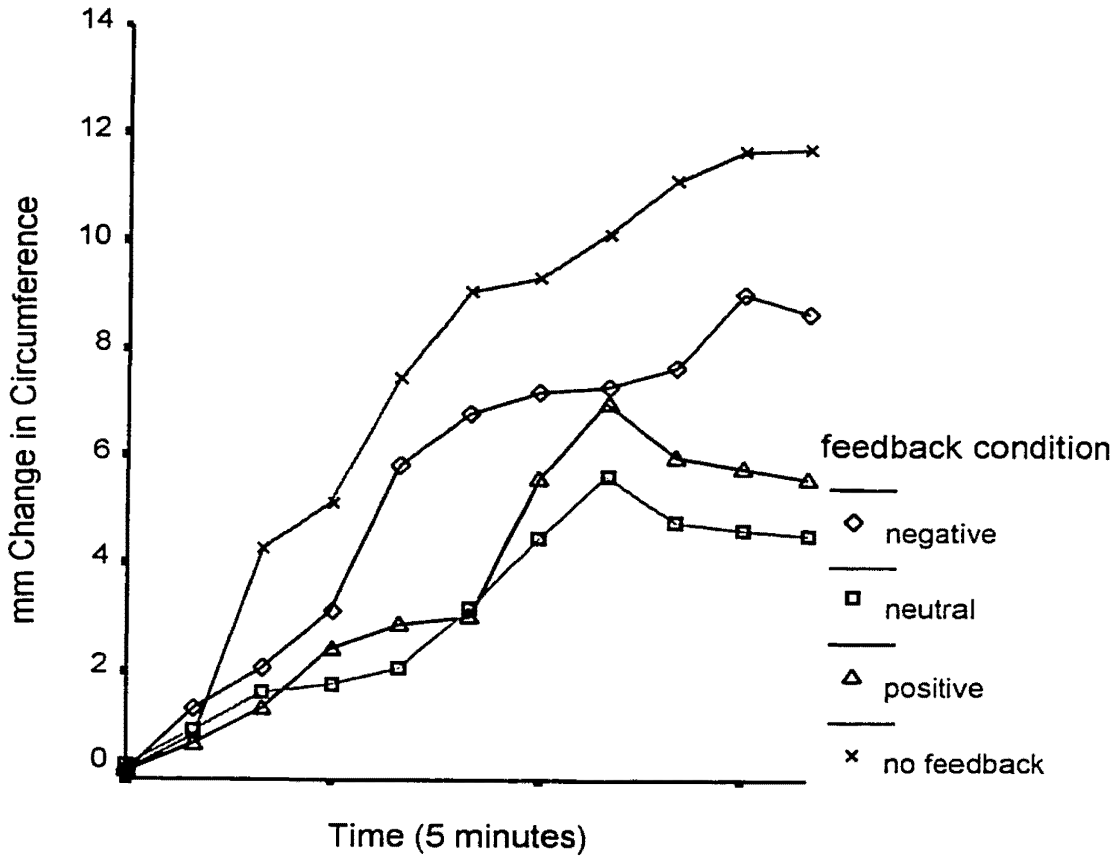

Figure 14. Mean change in penile circumference of the dysfunctional subjects by epoch across four false feedback conditions (negative, neutral, positive, and none) during Film 2.

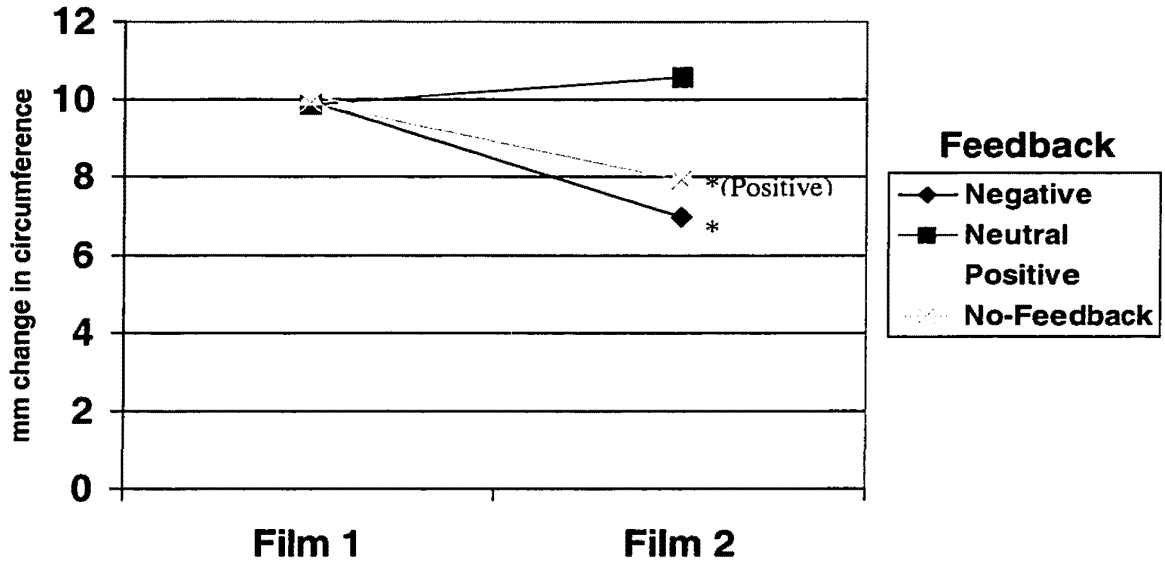

Figure 15. Mean strain gauge responses, averaged across stimulus duration, during four feedback conditions during Film 1 and Film 2 for the functional subjects.

*Significant difference between Film 1 and Film 2 ($p < .05$).

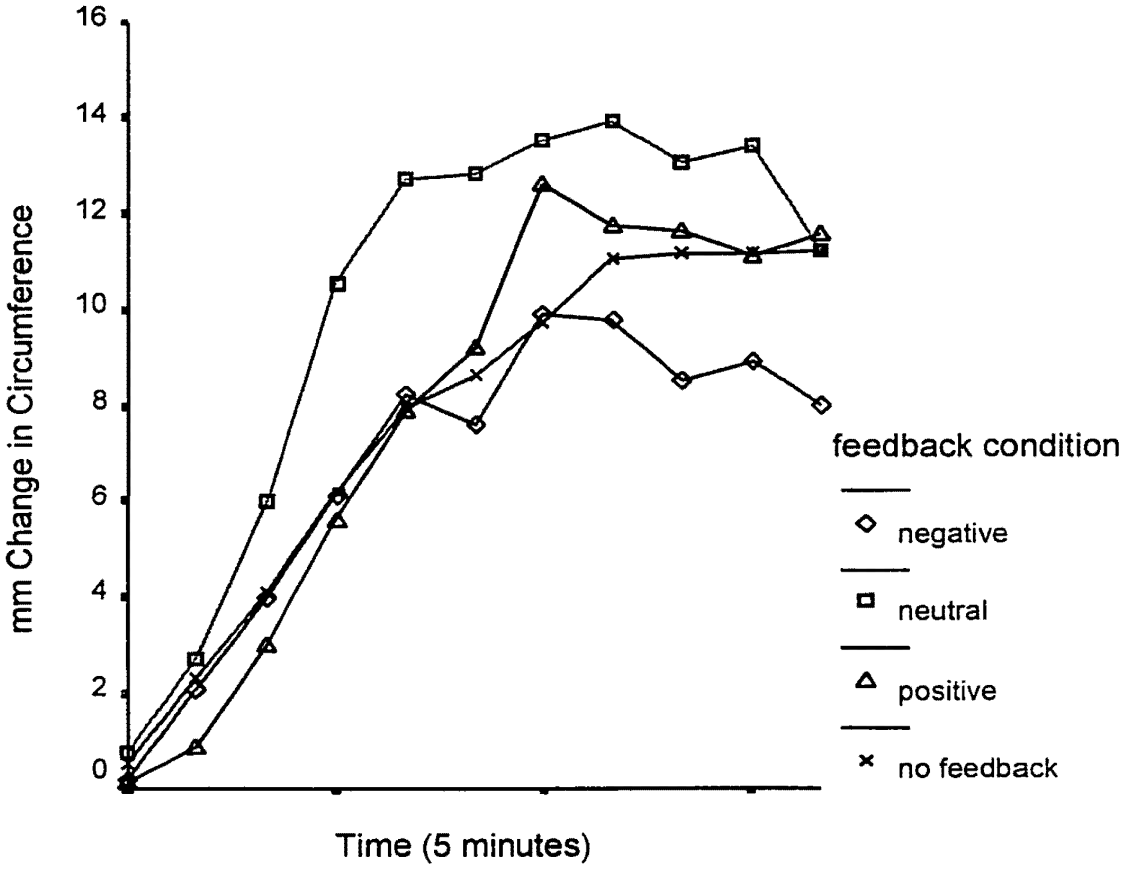

Figure 16. Mean change in penile circumference of the functional subjects by epoch across four false feedback conditions (negative, neutral, positive, and none) during Film 2.

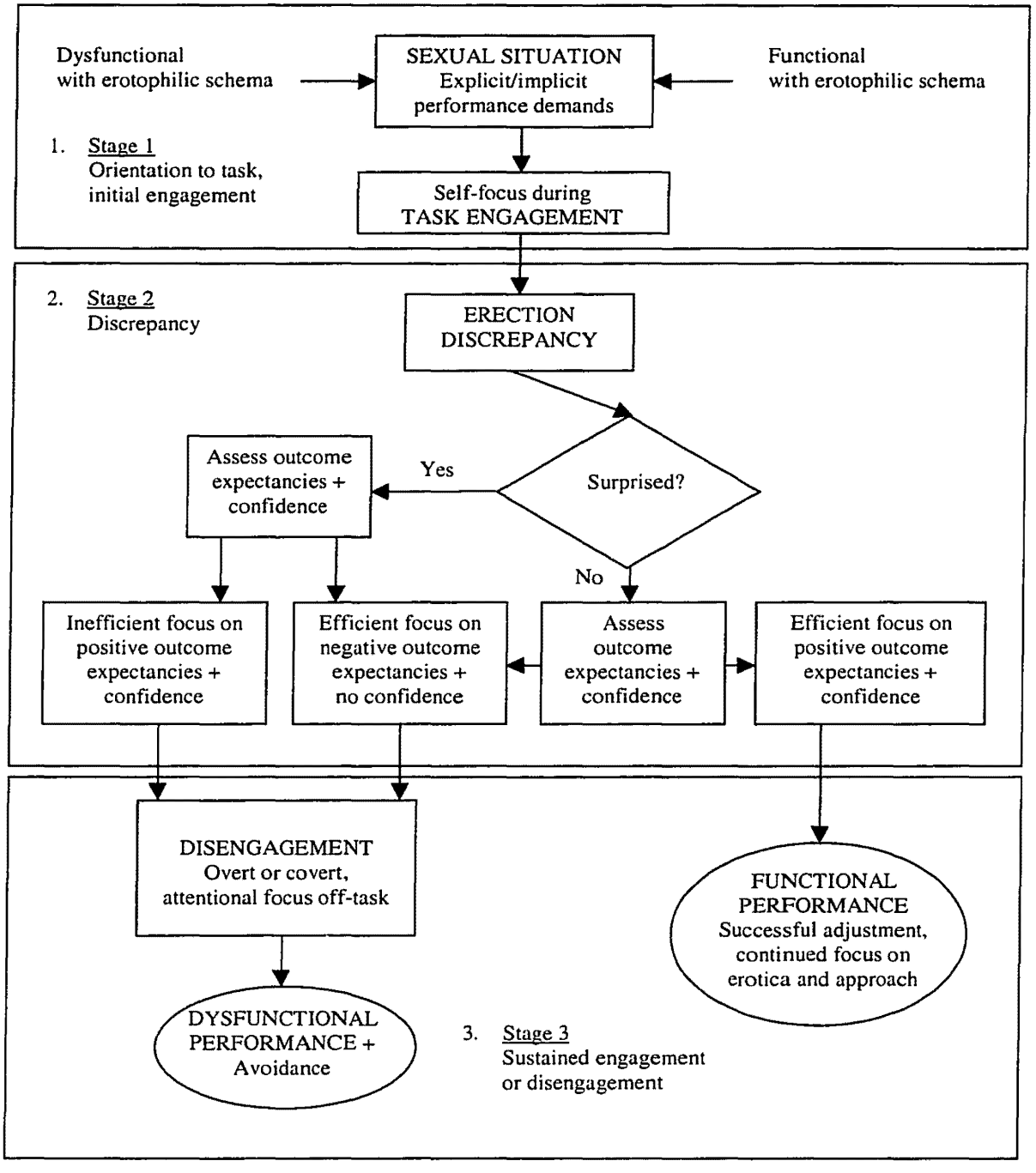

Figure 17. A revised model of sexual dysfunction: implications for examining attentional processes.

Table 1

Physical Changes in the Male During the Sexual Response Cycle

Desire Phase	No specific physical changes
Excitement	Erection begins
	Scrotum begins to thicken, scrotal folds disappear
	Testes begin to elevate
	Nipples may become erect (may be delayed until plateau phase)
	Heart rate and blood pressure increase
	General neuromuscular tension increases
Plateau	Rigidity of erection increases
	Head of the penis enlarges modestly
	Testes become enlarged and pulled up closer to the body
	Preejaculatory fluid may appear
	Sex flush may occur (about 25 percent of males)
	Heart rate and blood pressure increase further
	Breathing may become more shallow and rapid
	Voluntary contraction of rectal sphincter used by some males as a stimulative technique
	Further increase in neuromuscular tension
	Visual and auditory acuity are diminished
Orgasm	Onset of powerful involuntary rhythmic contractions of the prostate, seminal vesicles, rectum, and penis
	Ejaculation occurs shortly after prostatic contractions begin
	Testes pulled tightly against the body
	Sex flush, if present, reaches maximum color and spread
	Peak heart rates, blood pressure, and respiratory rates
	General loss of voluntary muscular control; may be cramplike spasms of muscle groups in the face, hands, and feet
Resolution	Rapid loss of most of the penile erection, followed by slower return to normal size
	Testes drop to their normal position and return to normal size
	Scrotum loosens and scrotal folds reappear
	Refractory period occurs during which another episode of ejaculation is not possible (duration of refractory period is highly variable, generally being shorter in younger males and increasing in duration with age)
	Loss of nipple erection
	Rapid disappearance of sex flush
	Irregular neuromuscular tension may continue, as shown by involuntary twitches or contractions of isolated muscle groups
	Heart rate, respiratory rate, and blood pressure return to baseline (preexcitation) levels
	General sense of relaxation is usually prominent
	Visual and auditory acuity return to usual levels

Note. From Heterosexuality (p. 55), by W. H. Masters, V. E. Johnson, and R. C. Kolodny, 1994, New York: Harper Collins.

Table 2

The DSM-IV Categories of Sexual Dysfunction

	Sexual Dysfunction	
Type of Disorder	Men	Women
Desire	Hypoactive Sexual Desire Disorder	Hypoactive Sexual Desire Disorder
	Sexual Aversion Disorder	Sexual Aversion Disorder
Arousal	Male Erectile Disorder	Female Sexual Arousal Disorder
Orgasm	Male Orgasmic Disorder	Female Orgasmic Disorder
	Premature Ejaculation	
Pain	Dyspareunia	Dyspareunia
		Vaginismus

Note. From Diagnostic and Statistical Manual of Mental Disorders (4th ed.), by the American Psychiatric Association, 1994, Washington, D.C: American Psychiatric Association.

Table 3

The DSM-IV Diagnostic Criteria for Male Erectile Disorder

A. Persistent or recurrent inability to attain, or to maintain until completion of the sexual activity, an adequate erection.
B. The disturbance causes marked distress or interpersonal difficulty
C. The erectile dysfunction is not better accounted for by another Axis I disorder (other than a Sexual Dysfunction) and is not due exclusively to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.
Specify type:
Lifelong Type
Acquired Type
Specify type:
Generalized Type
Situational Type
Specify type:
Due to Psychological Factors
Due to Combined Factors

Note. From Diagnostic and Statistical Manual of Mental Disorders (4th ed.) (p. 504), by the American Psychiatric Association, 1994, Washington, D.C: American Psychiatric Association.

Table 4.

Zilbergeld's (1992) Myths of Male Sexuality

1. We're liberated folks who are very comfortable with sex.
2. A real man isn't into sissy stuff life feelings and communicating.
3. All touching is sexual or should lead to sex.
4. A man is always interested in and always ready for sex.
5. A real man performs in sex.
6. Sex is centered on a hard penis and what's done with it.
7. Sex equals intercourse.
8. A man should be able to make the earth move for his partner, or at the very least knock her socks off.
9. Good sex requires orgasm.
10. Men don't have to listen to women in sex.
11. Good sex is spontaneous, with no planning and no talking.
12. Real men don't have sex problems.

Note. From The New Male Sexuality by B. Zilbergeld, 1992, New York: Bantam.

Table 5

Satisfaction with Vacuum Devices for Erectile Dysfunction Patients with Mixed Etiology

Study	No. of Patients	Average Follow-up (months	Satisfied or with Adequate Erection (%)
Witherington	1517	8.6	92
Cookston & Nadig	161	3	82
Sidi et al.	100	7.9	68
Van Thillo & Delaere	30	6	66
Turner et al.	36	6	89
Turner & Althof	36	6	81
Sidi & Lewis	31	3	93
Papp et al.	48	one use in office	71

Table 6

Satisfaction with Vacuum Devices for Erectile Dysfunction Patients: Selected Populations

Study	No. of Patients	Average Follow-up (months)	Satisfied or With Adequate Erection (%)	Patient Characteristics
Korenman et al.	20	6	100	Abnormal snap gauge
Aloui et al.	16	3	75	Organic cause
Al-Juburi & O'Donnell	44	6	73	Organic cause
Blackard et al.	47	unknown	69	Venous leak
Arauz-Pacheco et al.	12	3	75	Diabetes; no vascular disease, hypertension, or other endocrine disease
Heller et al.	17	21	83	Various neurologic causes
Moul & McLeod	11	1	91	Explanted prosthesis
Korenman & Viosca	17	6	94	Status post pelvic radiation or surgery on unsuccessful implant
Gilbert & Gingell	45	3	27	Failed self-injection
Meinhardt et al.	74	3 weeks	30	Failed sexual counseling, self-injection, venous surgery, or prosthesis

Table 7

Timeline of Information Collected During the Study

Phone Screen	Intake Interview	Organic/Psycho -genic Rating	Physiological Assessment*	Debriefing Session	Follow-up Phonecall
Phone Screen Form	Informed Consent Form	Organic Rating Scale	SEE BELOW	Film Quiz	
	SDI	Psychogenic Rating Scale			
	SCID				
	Medical Information Form				
	BDI				
	BAI				
	Authorization for Exchange of Information				

Table 8

Information Collected During the Physiological Assessment

Pre-Film 1	Film 1	Post-Film 1	Pre-Film 2	Film 2	Post-Film 2	Pre-Film 3
Flaccid Penile Circumfer-ence Measurement	Penile Tumescence	Sexual Arousal Questionnaire	Erection Score Prediction Questionnaire (feedback)	Penile Tumescence	Sexual Arousal and Feedback Questionnaire (feedback)	Erection Score Prediction Questionnaire (feedback)
Erection Prediction Questionnaire	Heart Rate		Erection Prediction Questionnaire (no-feedback)	Heart Rate	Sexual Arousal Questionnaire (no-feedback)	Erection Prediction Questionnaire (no-feedback)

Table 9

Statistical Power Analysis (ANCOVA)

Factor Name	Number of levels	Cases per level	Effect size F	Power	F Adjusted for covariates	Power adjusted for covariates
Feedback	Levels = 4	16	0.40	0.71	0.45	0.80
Functional Status	Levels = 2	32	0.40	0.85	0.45	0.91
Feedback x Functional Status	Df = 3		0.40	0.71	0.45	0.80

Within cell SD = 1.00, Variance = 1.00
Number covariates = 1, R-squared for covariates = 0.20
Cases per cell = 8, Total N of cases = 64
Alpha (2-tailed) = 0.05
Power computations: Non-central F

Table 10

Expectancy and Confidence Ratings

		Pre-FILM 2 Questionnaires			Pre-FILM 3 Questionnaires		
		Erection Prediction (0 – 150) (SD)	Confidence (0 – 150) (SD)	Score Prediction (0 – 12) (SD)	Erection Prediction (0 – 150) (SD)	Confidence (0 – 150) (SD)	Score Prediction (0 – 12) (SD)
Dysfunctionals	Negative	58 (41)	64 (31)	7.7* (3.7)	48 (44)	62 (39)	4.2* (3.2)
	Neutral	75 (47)	80 (42)	8.9 (4.2)	66 (39)	82 (37)	9.3 (4.4)
	Positive	50 (41)	48* (30)	6.4* (4.2)	47 (41)	66* (37)	9.0* (4.9)
	None	53* (36)	58 (30)	-	29* (44)	46 (44)	-
	Total	59 (42)	63 (35)	7.7 (4.1)			
Functionals	Negative	100* (32)	84 (25)	12.3* (3.3)	71* (30)	82 (33)	8.2* (4.1)
	Neutral	70 (48)	81 (34)	8.8 (6.0)	69 (43)	83 (44)	9.2 (6.0)
	Positive	82 (40)	74* (38)	10.6* (4.8)	85 (36)	90* (32)	12.7* (4.0)
	None	79 (43)	93 (41)	-	74 (40)	83 (40)	-
	Total	82 (41)	83 (35)	10.6 (4.9)			

* Statistically significant difference ($p < .05$) between Pre-Film 2 and Pre-Film 3.

Table 11

Expectancy and Confidence Ratings (Controlled for Pre-FILM 2)

		Pre-FILM 3 Questionnaires		
		Erection Prediction (0 – 150) (SE)	Confidence (0 – 150) (SE)	Score Prediction (0 – 12) (SE)
Dysfunctionals	Negative	49 (6.7)	61 (8.6)	4.2_a (0.6)
	Neutral	54 (6.8)	72 (8.9)	8.2_b (0.6)
	Positive	54 (6.7)	75 (8.8)	10.2_c (0.6)
	None	43 (12.6)	54 (16.1)	-
Functionals	Negative	58_a (5.6)	81 (7.7)	6.6_a (0.5)
	Neutral	79_b (5.6)	84 (7.7)	10.9_b (0.5)
	Positive	85_b (5.0)	96 (7.0)	12.6_c (0.5)
	None	77_b (5.3)	76 (7.5)	-

Note. Means in the same column that do not share subscripts differ at $p < .05$.

Table 12

Post-Film 1 Questionnaire (All Subjects)

		Arousal (0 – 150) (SD)	Anxiety (0 – 150) (SD)	Confidence (0 – 150) (SD)	Size of Erection (0 – 150) (SD)	Attention to Film (0 – 150) (SD)	Attention to Body (0 – 150) (SD)	Control of Erection (0 – 150) (SD)	Negative Thoughts (0 – 150) (SD)	Thought Interference (0 – 150) (SD)	Similar to Reality (0 – 150) (SD)
Dysfunctionals	Negative	64 (47)	55 (32)	51 (51)	41 (53)	108 (32)	81 (28)	45 (42)	48 (37)	60 (39)	58 (42)
	Neutral	54 (45)	55 (37)	55 (43)	44 (49)	99 (40)	82 (43)	32 (38)	40 (33)	36 (37)	62 (56)
	Positive	42 (34)	56 (39)	31 (29)	32 (37)	83 (45)	69 (39)	33 (34)	73 (45)	60 (44)	50 (36)
	None	55 (38)	47 (39)	32 (39)	47 (50)	129 (26)	95 (46)	28 (34)	26 (25)	41 (45)	44 (47)
	Total	54 (41)	53 (36)	42* (42)	41* (47)	105 (39)	82 (40)	35* (37)	47 (39)	50 (41)	54 (45)
Functionals	Negative	75 (32)	44 (30)	85 (39)	86 (36)	100 (39)	92 (38)	66 (44)	46 (35)	69 (51)	55 (45)
	Neutral	54 (43)	40 (49)	57 (52)	61 (55)	89 (35)	71 (45)	70 (44)	35 (36)	51 (46)	56 (49)
	Positive	63 (36)	45 (32)	71 (41)	55 (41)	98 (31)	67 (30)	46 (40)	36 (38)	53 (32)	49 (45)
	None	69 (41)	44 (38)	68 (46)	66 (55)	87 (35)	66 (33)	55 (38)	41 (49)	49 (44)	50 (46)
	Total	65 (38)	43 (37)	70* (44)	67* (48)	94 (34)	74 (37)	58* (42)	39 (39)	55 (42)	52 (45)

*Statistically significant difference ($p < .05$) between dysfunctionals and functionals.

Table 13

Post-Film 2 Questionnaire (All Subjects)

		Arousal (0 – 150) (SD)	Anxiety (0 – 150) (SD)	Confidence (0 – 150) (SD)	Size of Erection (0 – 150) (SD)	Attention to Film (0 – 150) (SD)	Attention to Body (0 – 150) (SD)	Control of Erection (0 – 150) (SD)	Negative Thoughts (0 – 150) (SD)	Thought Interference (0 – 150) (SD)	Similar to Reality (0 – 150) (SD)
Dysfunctionals	Negative	62 (43)	58 (31)	44 (35)	40 (49)	87* (27)	92 (27)	38 (40)	59 (38)	68 (37)	59 (44)
	Neutral	57 (29)	58 (35)	51 (37)	48 (34)	99 (35)	76 (35)	34 (26)	33 (29)	39 (35)	69 (47)
	Positive	62* (44)	44* (28)	39** (32)	42 (41)	96** (40)	87* (36)	46 (38)	34* (28)	46 (34)	55 (35)
	None	72* (45)	48 (34)	45* (42)	53 (57)	125 (25)	91 (39)	23 (39)	33 (34)	47 (44)	44 (42)
Functionals	Negative	55* (27)	57** (40)	60* (30)	51* (27)	90 (32)	92 (31)	39* (23)	55 (35)	86 (42)	41* (38)
	Neutral	66 (52)	35 (48)	72 (53)	61 (51)	104** (32)	94* (37)	66 (45)	20** (25)	38** (45)	56 (50)
	Positive	77* (29)	45 (32)	74 (35)	79* (39)	101 (33)	83** (31)	58 (34)	30 (29)	44 (29)	46 (32)
	None	75 (49)	40 (37)	60 (46)	63 (53)	91 (38)	79 (39)	57 (42)	41 (47)	36 (40)	53 (57)

* Statistically significant difference ($p < .05$) between Film 1 and Film 2.

** Statistical trend ($p < .10$) between Film 1 and Film 2.

Table 14

Post-Film 2 Questionnaire (Controlled for Post-Film 1 Questionnaire)

		Arousal (0 – 150) (SE)	Anxiety (0 – 150) (SE)	Confidence (0 – 150) (SE)	Size of Erection (0 – 150) (SE)	Attention to Film (0 – 150) (SE)	Attention to Body (0 – 150) (SE)	Control of Erection (0 – 150) (SE)	Negative Thoughts (0 – 150) (SE)	Thought Interference (0 – 150) (SE)	Similar to Reality (0 – 150) (SE)
Dysfunctionals	Negative	54 (7.1)	57 (5.6)	38 (6.5)	40 (6.7)	85_a (6.0)	93 (7.2)	30 (6.4)	58_a (8.4)	63 (8.6)	56 (7.8)
	Neutral	57 (7.0)	56 (5.6)	42 (6.5)	46 (6.7)	103_b (6.0)	77 (7.2)	36 (6.3)	35 (8.4)	46 (8.6)	63 (7.8)
	Positive	71 (7.1)	42 (5.6)	46 (6.5)	50 (6.7)	110_b (6.3)	94 (7.3)	47_a (6.3)	27_b (8.9)	41 (8.6)	58 (7.8)
	None	71 (6.8)	52 (5.4)	53 (6.3)	49 (6.5)	110_b (6.1)	84 (7.1)	28_b (6.1)	38 (9.4)	51 (9.2)	50 (8.5)
Functionals	Negative	47_a (7.1)	56_a (6.2)	50_a (8.2)	37_a (8.1)	86 (7.7)	82 (8.4)	35_a (7.8)	49_a (6.8)	78_a (8.1)	39 (8.2)
	Neutral	75_b (7.1)	38_b (6.2)	80_b (8.2)	65_b (8.0)	107 (7.7)	95 (8.1)	58_b (7.9)	24_b (6.5)	41_b (8.0)	46 (8.5)
	Positive	79_b (6.4)	44 (5.6)	74_b (7.3)	87_c (7.2)	99 (7.0)	86 (7.4)	66_b (7.1)	33 (5.9)	45_b (7.2)	48 (7.4)
	None	72_b (6.8)	39_b (6.0)	62 (7.8)	63_b (7.7)	95 (7.5)	83 (7.9)	59_b (7.5)	41 (6.3)	39_b (7.7)	55 (7.9)

Note. Means in the same column that do not share subscripts differ at $p < .05$.

Table 15

Additional Post-Film 2 Questionnaire (Feedback Subjects)

		Score Distraction (0–150) (SD)	Score Arousal (0–150) (SD)	Score Anxiety (0-150) (SD)	Score Confidence (0-150) (SD)	Score Erection Maint. (0-150) (SD)	Score Attention to Film (0-150) (SD)	Score Attention to Body (0-150) (SD)	Score Control over Erection (0-150) (SD)	Score Accuracy (0-150) (SD)	Control over Score (0-150) (SD)	Tried to Change Score (0-150) (SD)	Score Surprise (0-150) (SD)
Dysfunctionals	Negative	78_a (41)	48_a (27)	94 (24)	56 (26)	56_a (27)	63 (24)	92_a (28)	62 (27)	66_a (20)	36 (36)	69 (38)	51 (47)
	Neutral	50_b (38)	65 (40)	76 (39)	63 (36)	60 (24)	59 (33)	62_b (28)	57 (29)	83 (30)	26 (29)	82 (57)	65 (49)
	Positive	59 (25)	74_b (29)	74 (28)	77 (27)	75_b (21)	74 (31)	79 (21)	74 (19)	97_b (41)	29 (25)	102 (40)	84 (37)
Functionals	Negative	93_a (30)	44_a (39)	106_a (21)	54_a (32)	59 (35)	62 (33)	93 (32)	57_a (31)	84 (30)	38 (22)	85 (36)	94_a (37)
	Neutral	56_b (36)	66 (22)	81_b (23)	68 (13)	68 (16)	68 (26)	89 (20)	79_b (25)	73 (11)	51 (47)	68 (38)	38_b (45)
	Positive	58_b (38)	82_b (30)	76_b (32)	77_b (24)	75 (34)	76 (37)	83 (35)	81_b (25)	81 (30)	58 (31)	77 (38)	92_a (31)

Note. Means in the same column that do not share subscripts differ at $p < .05$.

Table 16

Film Quiz Scores

		Total Score (SD)
Dysfunctionals	Negative	9.86_a (3.3)
	Neutral	9.07_a (2.3)
	Positive	9.71_a (3.0)
	None	10.33_a (1.7)
	Total	9.75_a (2.6)
Functionals	Negative	9.62_a (3.1)
	Neutral	10.54_a (2.6)
	Positive	9.50_a (2.6)
	None	10.21_a (1.8)
	Total	9.95_a (2.5)

Note. Means in the same column that do not share subscripts differ at $p < .05$.

Table 17

Variables That Increased From Film 1 to Film 2

Dysfunctionals	**Negative**							
	Neutral							
	Positive	Score Prediction	Confidence in Prediction	Arousal		Confidence During Film	Attention to Film	Attention to Body	
	None			Arousal		Confidence During Film			
Functionals	**Negative**				Anxiety				
	Neutral						Attention to Film	Attention to Body	
	Positive	Score Prediction	Confidence in Prediction	Arousal				Attention to Body	Perceived Size of Erection
	None								

Table 18

Variables That Decreased From Film 1 to Film 2

Dysfunctionals											
	Negative		Score Prediction					Attention to Film				
	Neutral	Tumescence										
	Positive	Tumescence			Anxiety					Negative Thoughts		
	None			Erection Size Prediction								
Functionals	**Negative**	Tumescence	Score Prediction	Erection Size Prediction	Arousal	Confidence During Film	Perceived Size of Erection		Perceived Control Over Erection			Similarity to Reality
	Neutral									Negative Thoughts	Thought Interference	
	Positive	Tumescence										
	None											

Appendix A

Subject Recruitment and Selection

Subject Recruitment and Selection

Subject Recruitment

(1) Referral Sources: Referral of dysfunctional subjects primarily came from local urologists. A recruitment letter was mailed to urologists in the greater metropolitan area. The letter described the purpose of the study, the type of subjects being sought and the availability of free assessment and treatment. These subjects received a thorough assessment of their sexual functioning prior to participating in the proposed experiment. Subjects signed a release of information in order to obtain information from the referring provider. This release can be found in Appendix H. A report detailing the assessment results of each dysfunctional subject was sent to their referral source following their participation in the study. Dysfunctional subjects were also recruited by placing advertisements for this study in local newspapers and public access television community bulletin boards. A copy of the advertisement is in Appendix B. Dysfunctional subjects differed from functional subjects only in that they were diagnosed with DSM-IV Male Erectile Disorder, Due to Psychological Factors, as determined by the referring physician, Dr. Sbrocco, and Dr. Lewis. The dysfunctional subjects were paid $40 for their participation in the study.

Sexually functional men were recruited from the local area through newspaper and public access television advertisements (See Appendix B). These subjects were also paid $40 for their participation in the study (intake interview, physiological assessment, and accomplishing questionnaires). Early data indicate that normal volunteers for studies of sexual behavior obtained in this manner do not differ from the population at large in prevalence of excessive "liberality" of views of sexual behavior or in the prevalence of excessive anxiety or inhibitions concerning sex (Thorne, 1966; Udry & Morris, 1967).

(2) Initial Phone Contact: When a prospective subject initially called the lab, the principal investigator explained the study and conducted a phone screen. When the lab's procedures were explained to a functional volunteer subject, the following was included:

(a) The purpose of the study.

(b) Mention and explanation of physiological measurement (penile tumescence). Explanations were made using appropriate language.

(c) Confidentiality: It was explained to the subject that all information collected during the studies is coded and that his name will not appear on any records.

(d) It was explained to the caller that there were restrictions placed upon us regarding who we could use as subjects. Therefore, it was necessary to do an initial screening interview, lasting approximately one hour. For clinical subjects, it was explained that this interview was a time when we could gather information regarding the nature of their problems as well.

(e) It was explained to the caller that the interview and assessment would be conducted by doctoral students in clinical psychology who were supervised by a clinical psychologist.

(f) All subjects would be paid $40 for participating in the study (to include intake interview, physiological measurements, and questionnaires).

(g) Any questions raised by the caller were answered.

(h) If the caller was still interested in volunteering, the phone screen form was completed (See Appendix C).

(i) If the caller met the inclusion criteria, a 2 ½ hour session was scheduled.

Subject Selection

(1) The sexually "functional" group was comprised of 21-60 year old males who reported a history of adequate sexual functioning (adequate sexual arousal, orgasm with

intercourse, and a subjective sense of arousal), as well as not meeting the diagnostic criteria for Male Erectile Disorder (DSM-IV). Subjects also met the screening criteria (see Screening Criteria below).

(2) The sexually "dysfunctional" group was comprised of 21-60 year old males who had been referred for a sexual problem or who responded to local advertisements. All dysfunctional subjects met the diagnostic criteria for Male Erectile Disorder (DSM-IV) and met all of the screening criteria (see Screening Criteria below).

Screening Criteria. All subjects were clinically and physically screened during a one hour initial screening session. The following is a description of the methods and criteria for determination of subject eligibility:

(1) Presence of psychopathology: Current contact with a psychotherapist for treatment of emotional or behavioral disturbance, other than an erectile problem for dysfunctional subjects, and/or history of past psychiatric hospitalization was normally sufficient to exclude a subject from participation in the proposed studies. A careful assessment of the subject's current life situation also was made during the clinical interview and any subject who met DSM-IV criteria for emotional or behavioral disorder was excluded from participation in this study. The screening section of the SCID, which assists in making DSM-IV diagnoses, was an efficacious assessment tool for this purpose. The interviewer also reviewed results from the Beck Depression Inventory and the Beck Anxiety Inventory.

(2) Emotional distress at the prospect of viewing explicit sexual material: Each subject's experience with erotic literature was assessed; this included past emotional reactions to viewing explicit sexual material and/or anticipation of having such an emotional reaction. Any subject expressing this type of concern was excluded from participation in the proposed study.

(3) Assessment of sexual functioning: The subject was interviewed using a semi-structured interview (Sexual Dysfunction Interview-revised, attached). The interview typically lasted one hour and consisted of a thorough assessment of the subject's sexual history, experiences, attitudes, and difficulties. Following completion of this interview and the above-described psychiatric screening, the dysfunctional subject was given a "psychogenic" rating on a 0-5 (0 = psychogenic factors do not appear to be involved, and 5 = psychogenic factors are definitely involved and appear to be the causative and/or maintaining factor in the dysfunction). A rating of 4 or 5 was necessary for inclusion as a sexually dysfunctional subject.

(4) Physical assessment: The Medical Information Form asked the subject questions concerning physical health in order for the study's physician, Dr. Lewis, to make a detailed assessment of relevant medical complications (e.g., prostatitis, genital surgery, diabetes) or prescription medications (e.g., anti-hypertensives) that have been reported to be associated with erectile failure. Each subject was then given an "organicity" rating on a scale from 0-5 (0 = no pathology found, and 5 = definite evidence of pathology directly related to erectile dysfunction). A rating of 2 or greater was of sufficient severity to exclude a subject from participation in the proposed study. Assessing sexual dysfunctions on both dimensions independently rather than treating psychogenic and organic as opposite ends of a single dimension is now standard procedure in most sex research laboratories.

(5) In summary, the general screening criteria were:

(a) Age: 18 - 60

(b) No major psychological disturbance

(c) A psychogenic rating of 4 or 5 for clinical subjects

(d) Consent to view explicit sexual materials

(e) Organic rating of no greater than 1 for both groups

Other Considerations in Subject Selection

(1) If a clinically referred subject did not meet the inclusion criteria for this study, or did not wish to participate in this study, he was still offered a complete assessment, including an interview and a physiological evaluation (measurement of his erection while viewing erotic videotape segments). An assessment report was sent to his referring physician. If appropriate, treatment was also offered at no cost.

(2) Treatment was not a direct objective of any part of this proposal and subjects were so informed. However, when appropriate, subjects were offered treatment at no cost.

(3) These specific issues mentioned above were not the only questions related to subject selection. The usual considerations regarding research with human participants were implemented in the proposed study. These included the following:

(a) Informing participants of all factors influencing their willingness to participate in the studies.

(b) The explanation of any descriptions with the restoration of the relationship between the investigator and the subject following completion of the studies.

(c) Clarification for the subject of his constant freedom to decline participation in the studies at any time without fear of prejudice.

(d) Confidentiality of the results. Records and data from subjects in these studies were filed separately (kept in a locked filing cabinet) and were inaccessible to anyone except the personnel on this project.

(e) Detection and removal of any unwanted consequences of the study following completion.

(f) It was emphasized to the dysfunctional (clinical) subjects that their clinical assessment will be conducted in the context of a research program.

(g) All subjects were told in advance that a thorough debriefing interview would follow the experimental session.

Appendix B

Newspaper Advertisement for Recruitment of Sexually Functional Subjects

Newspaper Advertisement for Recruitment of Sexually Functional Subjects

Men Earn $40 in Laboratory Study of Factors Impacting Sexual Arousal

University study seeks healthy men, 18-60, for 3-hr laboratory assessment. The purpose of the study is to gain a better understanding of factors that affect sexual functioning. We are looking for 2 types of volunteers: men with erection problems and men without any sexual problems. If you are interested, call Jay Stone at (301) 295-3672 for more information.

Appendix C

Phone Screen Forms

PHONE SCREEN – CONTROLS

INTRODUCTION (READ TO CALLER)

"Based on experimental data collected over the past decade, men who have erection problems are known to differ from men who don't in several areas. One of these important areas includes how feedback about their sexual performance affects erection size. The purpose of this study is to determine how the performance of sexually functional and dysfunctional men is affected by receiving feedback about their erection size while viewing sexually explicit videotapes. Sexually functional and dysfunctional men meeting certain criteria will be asked to participate in a sexual functioning study.

The study will consist of three phases. During the first phase, we will be collecting information on your physical health, sexual functioning, and psychological health. This phase will take approximately one hour to complete. The second phase will also take approximately one hour to complete and involves the physiological assessment of your erection while viewing sexually explicit videotapes. You will be asked to wear a thin rubber tube around your penis to collect information about your erection while you view erotic movies in the privacy of a small room in one of our laboratories. During the second phase, you will also be filling out questionnaires asking you about your sexual performance and making predictions about your performance. During the third phase you will be explained the results of your participation in the study. This phase will take approximately 30 minutes. The interview and physiological assessment are conducted by doctoral students in clinical psychology who are supervised by a licensed clinical psychologist. All information collected during the study is coded and your name will not appear on any records. You will be paid $40 for your participation in the three phases of the study. Do you have any questions? If you are interested in participating in this study I now need to ask you a series of questions to determine if you are the type of person we are looking for: Are you interested?" (If yes, get the following information. If no, thank the caller and discontinue the screening.)

DATE _____

NAME _____

ADDRESS _____

_____

1. HOME PHONE _____
2. WORK PHONE _____
3. AGE _____
4. RACE _____
5. HEIGHT _____

6. WEIGHT _____

7. DO YOU SMOKE? YES NO

8. WHAT IS YOUR MARITAL STATUS?

_____

9. ARE YOU EMPLOYED? YES NO

10. ARE YOU IN THE MILITARY OR A MILITARY DEPENDENT? YES NO

11. HAVE YOU EVER BEEN TOLD BY A PHYSICIAN THAT YOU HAD:

A. HEART DISEASE	YES	NO
B. HIGH BLOOD PRESSURE	YES	NO
C. KIDNEY DISEASE	YES	NO
D. DIABETES	YES	NO
E. SEXUAL PROBLEMS	YES	NO
F. PROSTATE PROBLEMS	YES	NO
G. BACK INJURY	YES	NO

12. ARE YOU CURRENTLY ON ANY MEDICATION? YES NO

IF YES, WHAT ARE YOU TAKING?

_____

13. DO YOU HAVE ANY PROBLEMS WITH YOUR SEXUAL FUNCTIONING?

YES NO

SPECIFICALLY, DO YOU HAVE ANY PROBLEMS:

OBTAINING ERECTIONS? YES NO

MAINTAINING/KEEPING ERECTIONS YES NO

EJACULATING/CUMMING TOO QUICKLY? YES NO

HAVE YOU EVER HAD ANY PROBLEMS WITH YOUR SEXUAL FUNCTIONING? YES NO

HAVE YOU EVER HAD ANY PROBLEMS:

OBTAINING ERECTIONS? YES NO

MAINTAINING/KEEPING ERECTIONS YES NO

EJACULATING/CUMMING TOO QUICKLY? YES NO

14. ARE YOU HETEROSEXUAL? YES NO

15. HAVE YOU EVER RECEIVED MENTAL HEALTH COUNSELING? YES NO

IF YES, CAN YOU TELL ME ABOUT THAT?

_____

16. WOULD YOU BE ABLE TO COME IN FOR A 3 HOUR SESSION AS PART OF THIS STUDY? YES NO

17. WOULD YOU BE WILLING TO ANSWER QUESTIONS ABOUT YOUR PHYSICAL AND MENTAL HEALTH AND YOUR SEXUAL FUNCTIONING? YES NO

18. WOULD YOU BE WILLING TO WATCH EROTIC VIDEOTAPES WHILE WE MEASURE YOUR ERECTION? YES NO

19. WHEN CAN YOU COME IN FOR A 3 HOUR SESSION FOR YOUR PARTICIPATION IN THIS STUDY?

DATE _____ TIME _____

PHONE SCREEN - PATIENT REFERRALS

DATE _____

NAME _____

ADDRESS _____

_____

1. HOME PHONE _____
2. WORK PHONE _____
3. AGE _____
4. RACE _____
5. HEIGHT _____
6. WEIGHT _____
7. DO YOU SMOKE? YES NO
8. WHAT IS YOUR MARITAL STATUS?

   _____
9. DO YOU HAVE A REGULAR PARTNER? YES NO
10. ARE YOU EMPLOYED? YES NO
11. ARE YOU IN THE MILITARY OR A MILITARY DEPENDENT? YES NO
12. WHO REFERRED YOU TO THIS STUDY?

    NAME _____

    ADDRESS _____

    _____

    PHONE _____
13. HAVE YOU EVER BEEN TOLD BY A PHYSICIAN THAT YOU HAD:

A. HEART DISEASE YES NO
B. HIGH BLOOD PRESSURE YES NO
C. KIDNEY DISEASE YES NO
D. DIABETES YES NO
E. PROSTATE PROBLEMS YES NO
F. BACK INJURY YES NO

14. ARE YOU CURRENTLY ON ANY MEDICATION? YES NO

IF YES, WHAT ARE YOU TAKING?

_____

15. DO YOU HAVE ANY PROBLEMS WITH YOUR SEXUAL FUNCTIONING?

YES NO

16. SPECIFICALLY, DO YOU HAVE ANY PROBLEMS:

OBTAINING ERECTIONS? YES NO WHEN BEGAN? _____

MAINTAINING/KEEPING ERECTIONS YES NO WHEN BEGAN?
_____

EJACULATING/CUMMING TOO QUICKLY? YES NO WHEN BEGAN?
_____

17. HAVE YOU EVER HAD ANY PROBLEMS:

OBTAINING ERECTIONS? YES NO WHEN? _____

MAINTAINING/KEEPING ERECTIONS YES NO WHEN?
_____

EJACULATING/CUMMING TOO QUICKLY? YES NO WHEN?
_____

18. SOMETIMES PEOPLE HAVE HAD A VARIETY OF TESTS TO EVALUATE THEIR SEXUAL FUNCTIONING. HAVE YOU EVER HAD ANY?

BLOOD TESTS? YES NO

TEST OF HORMONE LEVELS? YES NO

MEASUREMENT OF BLOOD FLOW IN YOUR PENIS (DOPPLER STUDIES)?

YES NO

19. HAS YOUR DOCTOR TRIED ANY MEDICATION? YES NO

IF YES, WHAT?

_____

20. HAS YOUR DOCTOR INJECTED YOUR PENIS? YES NO

IF YES, WITH WHAT?

_____

21. ARE YOU HETEROSEXUAL? YES NO

22. HAVE YOU EVER RECEIVED MENTAL HEALTH COUNSELING? YES NO

IF YES, CAN YOU TELL ME ABOUT THAT? _____

23. RATIONALE: WE PROVIDE PSYCHOPHYSIOLOGICAL ASSESSMENTS OF SEXUAL FUNCTIONING. THIS MEANS WE TAKE VERY DETAILED INFORMATION ABOUT YOUR SEXUAL AND PSYCHOLOGICAL FUNCTIONING AND MEASURE YOUR ABILITY TO GET AN ERECTION WHILE VIEWING AN EROTIC VIDEOTAPE. THIS TAKES APPROXIMATELY 3 HOURS. BECAUSE THIS IS A RESEARCH STUDY, WE DO NOT CHARGE FOR THESE ASSESSMENTS AND TESTS. AT THE END OF THE ASSESSMENT WE PROVIDE YOU WITH THE RESULTS OF YOUR ASSESSMENT AND GIVE YOUR DOCTOR A REPORT.

24. WHEN CAN YOU COME IN FOR A 3 HOUR ASSESSMENT?

DATE _____ TIME _____

Appendix D

Informed Consent Forms

Informed Consent Form (Controls)
Research Study

Title of Project: Effect of Physiological Feedback on Arousal
Principal Investigator: Jay M. Stone, M.F.S.

Name of Volunteer: _____
(Please Print)

TO PERSONS WHO AGREE TO PARTICIPATE IN THIS STUDY:

You are being asked to take part in a research study. Before you decide to be a part of this research study, you need to understand the risks and benefits so that you can make an informed decision. This is known as informed consent.

This consent form provides information about the research study which has been explained to you. Once you understand the study and the tests it requires, you will be asked to sign this form if you want to take part in the study. Your decision to take part in the study is voluntary. This means that you are free to choose if you will take part in the study.

If, during the course of the study you should have any questions about the study, your participation in it or about your rights as a research subject, you may contact:

a. **Jay M. Stone, M.F.S.**, at 301-295-3672 (Principal Investigator)
Department of Medical & Clinical Psychology, USUHS, Bethesda, MD 29814-4799

b. **Tracy Sbrocco, Ph.D.**, at 301-295-9674 (Academic Advisor)
Department of Medical & Clinical Psychology, USUHS, Bethesda, MD 29814-4799

c. **Research Administration**, at 301-295-3303, USUHS, Bethesda, MD 29814-4799

1. INDICATED BELOW ARE THE FOLLOWING:

a. THE PURPOSE OF THIS STUDY
b. THE PROCEDURES TO BE FOLLOWED
c. THE APPROXIMATE DURATION OF THE STUDY

1.a. THE PURPOSE OF THIS STUDY:

The Department of Medical and Clinical Psychology of The Uniformed Services University of the Health Sciences is carrying out a research study to find out what effect getting feedback about men's erections has on their ability to maintain the erections. Problems with erections are common, affecting approximately 10% of the male population. Great strides have been made in the treatment of psychologically-based erection problems, yet little is known about how it can best be treated. This is because of

a limited understanding of the cause and maintenance of the problem. It is now known that erection difficulties are normal in the sense that they are commonly experienced. Yet only a percentage of men develop a problem significant enough to require treatment. Based on experimental data collected over the past decade, dysfunctional men and functional men are known to differ in several areas. Two of these important areas include how feedback about their sexual performance affects their continued and future performance, and where their attention is focused during sexual performance. The first purpose of this study is to determine how the performance of sexually functional and dysfunctional men is affected by receiving physiological (body-based) feedback about their erections while viewing erotic videotapes. The tapes involve consensual heterosexual sex and do not involve violence of any type. The second purpose of this study is to determine where the attention of sexually functional and dysfunctional men is focused when they receive erection feedback while viewing erotic videotapes. This study is being conducted by Jay M. Stone, M.F.S., a doctoral student in the Department of Medical and Clinical Psychology, for fulfillment of his degree requirements.

1.b. THE PROCEDURES TO BE FOLLOWED:

Phase 1. Initial Information Collection (1 hour)

During the first phase, you will be interviewed about your physical, sexual, and psychological history. The interviewer will use a standard format so that each participant will be asked the same questions. You will also be asked to complete a number of self-report measures that ask you about your medical history, and your sexual and psychosocial functioning.

Phase 2. Physiological Assessment (1 hour)

The second phase will also take approximately one hour to complete and involves a physiological assessment of your erection. Your erection will be monitored while you view an erotic videotape. You will be asked to partially undress, sit in a recliner, and place a strain gauge on your penis. A strain gauge is a small rubber tube while is placed around the shaft of your penis. It measures changes in penis size by having an electric current pass through it. The strain gauge is attached to a polygraph machine that receives and prints the information. You will not feel the electric current and the procedure is not dangerous. We will also monitor your heart rate using several sensors attached to your chest.

After the monitoring equipment is in place, you will be asked to watch three 5-minute videotapes showing a man and woman having sex. We will monitor your erection and heart rate. Before and after each video segment we will ask you to make some ratings about such things as how aroused and how nervous you are.

During the video, some men will receive feedback on their erection. We know men use all kinds of information to evaluate their performance such as how big their erection appears to be and how aroused their partner is. In this study, some participants will see an erection score on the video screen. The erection score is based on the size of your erection. We are interested in finding out how this information affects sexual responding and confidence and predictions about future sexual performance. Some participants will not be shown their erection score. This way we can compare the results of men who see their erection score with men who do not. The men who do not see their score will be chosen at random. This means we will use a procedure like "drawing a number out of a hat" to assign you to a group. The interviewer will inform you what group you are in.

All material and equipment that comes in contact with participants is either sterilized or disposed of after use.

Phase 3. Post-Session (30 min)

At the end of the videotape sessions (after you get dressed) the interviewer will meet with you and describe and explain your results from Phase 2. Any questions or concerns you have will be discussed. This phase will take approximately ½ hour to complete. The interviewer will also call you in a week to see if you have any additional questions.

1.c. DURATION OF THE STUDY:

The study will take approximately 2 ½ hours to complete.

2. THIS STUDY IS BEING DONE SOLELY FOR THE PURPOSES OF RESEARCH.

3. DISCOMFORTS, INCONVENIENCES, AND/OR RISKS THAT CAN BE REASONABLY EXPECTED ARE:

a. The risks associated with this study are minor. You may find that the interviews and the physiological assessment may make you uncomfortable. You will be asked detailed questions about your sexual functioning and activities. You will also be asked to partially undress and put a strain gauge on your penis while viewing erotic videotapes. You will NOT be forced to do anything you do not want to do. You may decline to participate at any time and/or withdraw your participation at any time.

b. You may feel upset or distressed if your erection score or your erection is lower than you predicted or expected. The interviewer will meet with you following the

physiological assessment to address any concerns you may have. Your results will be presented and discussed with you. Your questions and concerns will be addressed.

c. You will probably experience sexual arousal during the physiological assessment phase of the study. This response is normal and expected. Questions and concerns you may have about your response will be addressed during the post session.

d. The study involves a small time commitment that you may find inconvenient. You will be asked to come to the university for one 2 ½ hour appointment.

4. POSSIBLE BENEFITS TO YOU THAT MAY BE REASONABLY EXPECTED ARE:

a. You will earn $40 for your participation in this study.
b. You may learn information about your sexual functioning that is helpful to you.

5. THE BENEFITS TO SCIENCE AND TO HUMANKIND THAT ARE SOUGHT IN THIS STUDY ARE:

You will be providing information that will be helpful in expanding scientific knowledge about sexual behavior. The results of this study will help us gain a better understanding of how physiologic feedback affects sexual functioning. The results will also tell us how the attention of sexually functional men compares to sexually dysfunctional men. This knowledge could have important treatment and prevention implications.

6. ALTERNATE PROCEDURES THAT MAY BE ADVANTAGEOUS:

Not applicable.

7. COSTS

There are no costs to you for participating in this study.

8. YOUR RIGHTS, WELFARE, AND PRIVACY WILL BE PROTECTED IN THE FOLLOWING MANNER:

(1) All data obtained about you during the course of this study will be kept confidential and accessible only to the principal investigator, his academic advisor, and their assistants on this project. In addition, the Institutional

Review Board at The Uniformed Services University of the Health Sciences may see your records.

(2) Your name will not be associated with the information you provide. You will be assigned a subject number.

(3) Should the results of this project be published, you will be referred to only by number.

(4) Confidentiality is protected to the best extent provided under law.

9. RIGHT TO WITHDRAW FROM THE STUDY

You may decide to stop this study at any time. Your care and relations with the faculty, staff and administration at USUHS will not be changed in any way if you decide to stop the study. You should let the investigator in charge of the study know if you decide to stop the study.

10. RECOURSE IN THE EVENT OF INJURY:

This study should not entail any physical or mental risk beyond those described above. We do not expect complications to occur, but if, for any reason, you feel that continuing this study would constitute a hardship for you, we will end your participation in the study.

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11. QUESTIONS

If you have any questions at any time about the study you may contact the principal investigator, Jay Stone, M.F.S., at the Department of Medical and Clinical Psychology, Uniformed Services University, at (301) 295-3672, or his academic advisor, Dr. Tracy Sbrocco, at (301) 295-9674. If you have questions about your rights as a research subject, you should call the Director of Research Programs, in The Office of Research at the Uniformed Services University of the Health Sciences (301) 295-3303. This person is your representative and has no connection to the investigators conducting this study.

12. STATEMENT AND SIGNATURE OF VOLUNTEER

I have read this consent form and I understand the procedures to be used in this study and the possible risks, inconveniences, and/or discomforts that may be involved. All of my questions have been answered. I freely and voluntarily choose to participate. I understand I may withdraw at any time. My signature also indicates that I have received a copy of this consent form for my information.

Signature of Volunteer: _____

Printed Name of Volunteer: _____

Date: _____

13. STATEMENT AND SIGNATURE OF INVESTIGATOR

I certify that the research study has been explained to the above individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions have been raised, have been answered.

Signature of Witness: _____

Signature of Investigator: _____

Printed Name, Rank, and Title of Investigator: _____

Date: _____

Informed Consent Form (Patients)
Research Study

Title of Project: Effect of Physiological Feedback on Arousal
Principal Investigator: Jay M. Stone, M.F.S.

Name of Volunteer: _____
(Please Print)

TO PERSONS WHO AGREE TO PARTICIPATE IN THIS STUDY:

You are being asked to take part in a research study. Before you decide to be a part of this research study, you need to understand the risks and benefits so that you can make an informed decision. This is known as informed consent.

This consent form provides information about the research study which has been explained to you. Once you understand the study and the tests it requires, you will be asked to sign this form if you want to take part in the study. Your decision to take part in the study is voluntary. This means that you are free to choose if you will take part in the study.

If, during the course of the study you should have any questions about the study, your participation in it or about your rights as a research subject, you may contact:

a. **Jay M. Stone, M.F.S.**, at 301-295-3672 (Principal Investigator)
Department of Medical & Clinical Psychology, USUHS, Bethesda, MD 29814-4799

b. **Tracy Sbrocco, Ph.D.**, at 301-295-9674 (Academic Advisor)
Department of Medical & Clinical Psychology, USUHS, Bethesda, MD 29814-4799

c. **Research Administration**, at 301-295-3303, USUHS, Bethesda, MD 29814-4799

1. INDICATED BELOW ARE THE FOLLOWING:

a. THE PURPOSE OF THIS STUDY
b. THE PROCEDURES TO BE FOLLOWED
c. THE APPROXIMATE DURATION OF THE STUDY

1.a. THE PURPOSE OF THIS STUDY:

The Department of Medical and Clinical Psychology of The Uniformed Services University of the Health Sciences is carrying out a research study to find out what affect getting feedback about men's erections has on their ability to maintain the erections. Problems with erections are common, affecting approximately 10% of the male population. Great strides have been made in the treatment of psychologically-based erection problems, yet little is known about how it can best be treated. This is because of

a limited understanding of the cause and maintenance of the problem. It is now known that erection difficulties are normal in the sense that they are commonly experienced. Yet only a percentage of men develop a problem significant enough to require treatment. Based on experimental data collected over the past decade, dysfunctional men and functional men are known to differ in several areas. Two of these important areas include how feedback about their sexual performance affects their continued and future performance, and where their attention is focused during sexual performance. The first purpose of this study is to determine how the performance of sexually functional and dysfunctional men is affected by receiving physiological (body-based) feedback about their erections while viewing erotic videotapes. The tapes involve consensual heterosexual sex and do not involve violence of any type. The second purpose of this study is to determine where the attention of sexually functional and dysfunctional men is focused when they receive erection feedback while viewing erotic videotapes. This study is being conducted by Jay M. Stone, M.F.S., a doctoral student in the Department of Medical and Clinical Psychology, for fulfillment of his degree requirements.

1.b. THE PROCEDURES TO BE FOLLOWED:

Phase 1. Initial Information Collection (1 ½ hour)

During the first phase, you will be interviewed about your physical, sexual, and psychological history. The interviewer will use a standard format so that each participant will be asked the same questions. You will also be asked to complete a number of self-report measures that ask you about your medical history, and your sexual and psychosocial functioning.

Phase 2. Physiological Assessment (1 hour)

The second phase will also take approximately one hour to complete and involves a physiological assessment of your erection. Your erection will be monitored while you view an erotic videotape. You will be asked to partially undress, sit in a recliner, and place a strain gauge on your penis. A strain gauge is a small rubber tube while is placed around the shaft of your penis. It measures changes in penis size by having an electric current pass through it. The strain gauge is attached to a polygraph machine that receives and prints the information. You will not feel the electric current and the procedure is not dangerous. We will also monitor your heart rate using several sensors attached to your chest.

After the monitoring equipment is in place, you will be asked to watch three 5-minute videotapes showing a man and woman having sex. We will monitor your erection and heart rate. Before and after each video segment we will ask you to make some ratings about such things as how aroused and how nervous you are.

During the video, some men will receive feedback on their erection. We know men use all kinds of information to evaluate their performance such as how big their erection appears to be and how aroused their partner is. In this study, some participants will see an erection score on the video screen. The erection score is based on the size of your erection. We are interested in finding out how this information affects sexual responding and confidence and predictions about future sexual performance. Some participants will not be shown their erection score. This way we can compare the results of men who see their erection score with men who do not. The men who do not see their score will be chosen at random. This means we will use a procedure like "drawing a number out of a hat" to assign you to a group. The interviewer will inform you what group you are in.

All material and equipment that comes in contact with participants is either sterilized or disposed of after use.

Phase 3. Post-Session (30 min)

At the end of the videotape sessions (after you get dressed) the interviewer will meet with you and describe and explain your results from Phase 2. Any questions or concerns you have will be discussed. This phase will take approximately ½ hour to complete. The interviewer will also call you in a week to see if you have any additional questions.

1.c. DURATION OF THE STUDY:

The study will take approximately 3 hours to complete.

2. THIS STUDY IS BEING DONE PRIMARILY FOR THE PURPOSES OF RESEARCH.

The results will be explained to you and a written copy will be provided to your referring physician. This information may be helpful in gaining a better understanding of your problem.

3. DISCOMFORTS, INCONVENIENCES, AND/OR RISKS THAT CAN BE REASONABLY EXPECTED ARE:

a. The risks associated with this study are minor. You may find that the interviews and the physiological assessment may make you uncomfortable. You will be asked detailed questions about your sexual functioning and activities. You will also be asked to partially undress and put a strain gauge on your penis while viewing erotic videotapes. You will NOT be forced to do anything you do not want to do. You may decline to participate at any time and/or withdraw your participation at any time.

b. You may feel upset or distressed if your erection score or your erection is lower than you predicted or expected. The interviewer will meet with you following the physiological assessment to address any concerns you may have. Your results will be presented and discussed with you. Your questions and concerns will be addressed.

c. You will probably experience sexual arousal during the physiological assessment phase of the study. This response is normal and expected. Questions and concerns you may have about your response will be addressed during the post session.

d. The study involves a small time commitment that you may find inconvenient. You will be asked to come to the university for one 3 hour appointment.

4. POSSIBLE BENEFITS TO YOU THAT MAY BE REASONABLY EXPECTED ARE:

a. You will receive an extensive psychophysiological assessment of your sexual functioning. This information will be explained to you. A report will be provided to your referring physician and this information may be helpful in recommending treatment for your difficulties.

b. If it seems you may benefit from psychological treatment for sexual functioning, you will be offered treatment free of charge to treat your erection difficulty.

c. You will earn $40 for your participation in this study.

5. THE BENEFITS TO SCIENCE AND TO HUMANKIND THAT ARE SOUGHT IN THIS STUDY ARE:

You will be providing information that will be helpful in expanding scientific knowledge about sexual behavior. The results of this study will help us gain a better understanding of how physiologic feedback affects sexual functioning. The results will also tell us how the attention of sexually functional men compares to sexually dysfunctional men. This knowledge could have important treatment and prevention implications.

6. ALTERNATE PROCEDURES THAT MAY BE ADVANTAGEOUS:

You may obtain similar psychological and physiological assessments elsewhere. Should you decide not to participate in this study we will still provide you with a psychophysiological assessment of your sexual functioning, a written report will be sent to your referring physician, and if it seems you may benefit from psychological treatment

for sexual functioning, you will be offered treatment free of charge to treat your erection difficulty. If, on the other hand, you would prefer a referral for assessment and/or treatment, a community referral will be provided.

7. COSTS

There are no costs to you for participating in this study.

8. YOUR RIGHTS, WELFARE, AND PRIVACY WILL BE PROTECTED IN THE FOLLOWING MANNER:

(1) All data obtained about you during the course of this study will be kept confidential and accessible only to the principal investigator, his academic advisor, and their assistants on this project. In addition, the Institutional Review Board at The Uniformed Services University of the Health Sciences may see your records.

(2) Your name will not be associated with the information you provide. You will be assigned a subject number.

(3) Should the results of this project be published, you will be referred to only by number.

(4) Confidentiality is protected to the best extent provided under law.

9. RIGHT TO WITHDRAW FROM THE STUDY

You may decide to stop this study at any time. Your care and relations with the faculty, staff and administration at USUHS will not be changed in any way if you decide to stop the study. You should let the investigator in charge of the study know if you decide to stop the study.

10. RECOURSE IN THE EVENT OF INJURY:

This study should not entail any physical or mental risk beyond those described above. We do not expect complications to occur, but if, for any reason, you feel that continuing this study would constitute a hardship for you, we will end your participation in the study.

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Signature of Volunteer: _____

Printed Name of Volunteer: _____

Date: _____

13. STATEMENT AND SIGNATURE OF INVESTIGATOR

I certify that the research study has been explained to the above individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions have been raised, have been answered.

Signature of Witness: _____

Signature of Investigator: _____

Printed Name, Rank, and Title of Investigator: _____

Date: _____

Appendix E

Sexual Dysfunction Interview

SEXUAL DYSFUNCTION INTERVIEW-revised

◆◆◆

Tracy Sbrocco, Ph.D., Risa Weisberg, B.A., and David H. Barlow, Ph.D.

Albany, NY: 1995

◆◆◆

SEXUAL DYSFUNCTION INVENTORY

Client Name:

Address:

Home Ph:

Work Ph:

Referral Source:

Address:

Release of Information Obtained? **Yes** **No**

Date referral received:

I. Life Situation

Let me begin by getting some basic information:

1. DOB/Age

2. Ethnicity
   1 = Caucasian, Non-Hispanic
   2 = Black, Non-Hispanic
   3 = Hispanic
   4 = Asian
   5 = Other

3. Current Relationship Status
   1 = Never Married
   2 = Divorced
   3 = Separated
   4 = Widowed
   5 = Married
   6 = Living Together

4. Duration of Marital/Relationship Status (# of years)
   99= Missing or Not Applicable

5. Years of Education

a. Less than High School Degree
b. High School Degree
c. Partial College
d. College Degree
e. Graduate or Professional School

6. Occupation (Present or Previous)

1 = High Level Executive, Professional (M.D., Ph.D., Attorney)
2 = Business Manager, Lesser Professional (Nurse, Teacher, Social Worker)
3 = Administrator, minor professional [legal secretary, small business owner (e.g. bakery, clothing)]
4 = Clerical or sales worker, technician
5 = Skilled manual employee
6 = Machine operator, semi-skilled employee
7=Unskilled Employee (laborer, messenger)

7. Employment Status
1 = Retired
2 = Full-Time
3 = Part-Time
4 = Disabled
5 = Unemployed

8. Length of time at current job _____

II. **Presenting Problem(s)**
I **know about your sexual problem(s)** from what you said on the phone/what your M.D. said, etc.
Is that correct?

I will get back to your sexual functioning, but first I would like to ask you some questions pertaining to your overall psychological functioning. Many of the questions may not apply to you and some will.

Psychiatric Diagnostic Interview, revised (PDI-R)

Begin with **Alcoholism,** come back to Organic Brain Syndrome only if it seems necessary at the end of the interview.

Pay close attention to signs and symptoms of **Major Depression.** MDE can have a profound affect on sexual functioning. When in doubt, continue questioning.

Diagnoses: NONE

FREQUENCY OF SEXUAL BEHAVIOR

1. How often to you engage in intercourse with your/a partner?

2. What is your ideal frequency of intercourse?

3. How often do you engage in mutual cuddling/stimulation without intercourse?

4. I'd like to ask you some questions about masturbation/self-stimulation. I want to assure you that we consider it to be a normal, healthy activity. We are aware that not everybody feels this way...
How often do you engage in self-stimulation/masturbation?

SEXUAL DYSFUNCTIONS

I. SEXUAL DESIRE DISORDERS

A. Hypoactive Sexual Desire Disorder

1. How would you describe your interest in sex?

a. (If client describes problems) Has your interest changed or is your current interest pretty typical for you?

b. How long have you felt this way?

c. If change occurred, What was associated with or caused this change? i. personal stress/emotional problems ii. illness iii. marital problems iv. partner stress/emotional problems v. partner illness vi. sexual problem vii. medication

2. Do you have sexual fantasies

a. during intercourse? YES NO % time

b. during masturbation? YES NO % time

c. at other times? YES NO % time

3. Do you always feel this way or are there times or situations when you have a strong interest/desire in sex?

If client **is currently depressed (or has another Axis I) disorder OR **If the client has a medical problem(s) that may be related to his/her sexual functioning: ASK 0. 4. otherwise SKIP to 5.

4. Was **your interest/desire in sex low before your problem(s)** with _____ began?

5. Have you ever **been sexually abused,** raped, or **had a very** negative experience associated with sex?

If yes, what affect did this experience have on your sexual behavior?

a. avoid all/most sexual behavior
b. relationship difficulties; trust
c. pain
d. OTHER

SEXUAL AVERSION DISORDER

6. Do you avoid engaging in sexual behavior with your/a partner?

7. If in a relationship: Who usually intiates sexual activity in your relationship?

8. Do you experience anxiety or worry when you think about
engaging in sexual behavior with your/a partner?

If yes, what types of things do you say to yourself?

-performance self statements
-failure self statements
-concern about pleasing partner
-concern/worry about sexually transmitted diseases
-more general cognitive interference

9. **Do you fear engaging in sex?**

****If client is currently depressed** (or has **another Axis I such as I OCD disorder)** I or **If the client has a medical problem(s) that may be related to **his/her sexual functioning: (ASK** Q.10)

10. Did you avoid/fear sex before your problems with began?

DX:

Hypoactive Sexual Desire Disorder

Sexual Aversion Disorder

Specify: psychogenic only psychogenic and biogenic (biogenic only record on Axis III)

lifelong or acquired generalized or situational

II. MALE ERECTILE DISORDER

1. Do you have problems attaining/getting an erection?

2. Do you have problems maintaining/keeping an erection?

3. When did these problems begin? month and year

a. Did the problem come on gradually?

b. Is there a specific event associated with the start of the difficulty?

i. personal stress/emotional problems
ii. illness iii. marital problems
iv. partner stress/emotional problems
v. partner illness
vi. drinking/alcohol
vii. medication
viii. loss of partner

Classify event - Medical or Psychological

4. What percentage of the time is this a problem?

5. Using a 1 to 100 scale, where 1 is no erection and 100 is the best erection You've ever had ...

a. What percent of an erection do you **typically** obtain? _____

b. What percent describes the best erection you can get?_____

6. Do you have a problem with erections during foreplay?

7. Do you have a problem with erections when attempting penetration?

8. Are you able to penetrate?

What percent of the time? _____

9. Do you have problems maintaining your erection, that is, do you lose your erection?

What do you do when you lose your erection? a. quit/give up b. try to get it back - successful or not?

10. Do you have problems obtaining or maintaining an erection during masturbation?

**If individual describes problems obtaining or maintaining an erection:

11. Do you notice your ability to get an erection depends on the situation?

Partner
Masturbation vs Partner
Stress
Fatigue/Tired

12. Do you have morning erections?

13. Do you ejaculate with intercourse? with stimulation by partner? with self-stimulation?

Subjective pleasure/excitement:

14. How do you feel during sexual activity?

15. Do you experience an orgasm?

Dx:

Male Erectile Disorder

Onset

Specify: psychogenic only, psychogenic, and biogenic (biogenic only record on Axis III)

lifelong or acquired generalized or situational

III. ORGASM DISORDER

1. Do you ever have problems reaching orgasm during sexual behavior?

If yes, Does this difficulty occur with

a. masturbation
b. intercourse
c. foreplay/partner stimulation

2. Does it seem like you are aroused before experiencing this difficulty?

3. When did this difficulty begin?

Is onset associated with events such as

a. Relationship change or length of relationship

b. Change in the pattern of sexual behavior (for example, being used to multiple partners and now has one partner)

c. Stress

d. Medical problem

Dx:

Inhibited Male Orgasm Onset

Specify: psychogenic only **psychogenic and biogenic (biogenic only record on Axis III)**

lifelong or acquired generalized or situational

IV. PREMATURE EJACULATION

1. Do you ever experience problems ejaculating/coming before you are ready to?

Percent of the time:_____

2. Do you consider this a problems?

If client describes a problems ASK q.3, otherwise SKIP to DYSPAREUNIA

3. When did this begin?

4. If client indicates he does not ejaculate, inquire about prostate surgery.

5. Do you sometimes ejaculate before penetration, when you do not want to?

Does this occur after stimulation or is thinking about sex enough?

6. Do you ejaculate immediately after penetrating or in a shorter time than you wish?

Estimate the length of time _____

7. How long before you ejaculate during masturbation?

8. Do you have problems controlling your erections, that is having erections when you do not want to generally because it is embarrassing?

9. Do you notice that changes in the situation make a difference, for example:

a. partner attractiveness b. novelty of the situation c. length of time since last sexual experience or ejaculation d. oral sex e. what other factors influence latency to ejaculation (increase or decrease)?

10. Have you tried any of the following to delay ejaculation:

a. alcohol percent of time used

b. drugs

c. numbing cremes/ointments

d. thinking of un-arousing things

e. withdrawal/ceasing stimulation

DX:

Premature Ejaculation

Onset

Specify: psychogenic only psychogenic and biogenic (biogenic only record on Axis III)

lifelong or acquired generalized or situational

V. DYSPAREUNIA

1. Do you ever experience pain associated with sexual activity?

2. Does this occur before, during, after sexual activity?

Describe problem:

3. When did this problem begin?

4. Does this occur across all situations?

5. Assess whether this is due to lack of partner's **lubrication or** difficulty penetrating due to vaginismus.

DX:

Dyspareunia Onset

Specify: psychogenic only psychogenic and biogenic (biogenic only record on Axis III)

lifelong or acquired generalized or situational

COMMENTS:

Appendix F

Semi-Structured Clinical Interview for Axis I DSM-IV Disorders

Screening Questions

SCREENING QUESTIONS

Now I want to ask you some more specific questions about problems you may have had.

RESPOND TO POSITIVE RESPONSES WITH: We'll talk more about that later.

1. Have you ever had a period when you were feeling depressed or down most of the day nearly every day?
1 2 3 (Go To A.6)

2. Did something terrible ever happen to you that kept coming back to you in some way, like in dreams, flashbacks, or thoughts that you couldn't get rid of--like you could have died or been seriously hurt? **1 2 3 (Go To F.21)**

3a. Was there ever a period in your life when you drank too much? **1 2 3 (Go To E.1)**

3b. IF NO TO ABOVE: Has alcohol ever caused a problem for you? **1 2 3 (Go To E.1)**

3c. IF NO TO BOTH ABOVE: Has anyone ever objected to your drinking? **1 2 3 (Go To E.1)**

4. Have you ever used street drugs? **1 2 3 (Go To E.10)**

5. Have you ever gotten "hooked" on a prescribed medicine or taken a lot more of it than you were supposed to?
1 2 3 (Go To E.10)

6. Have you ever had a panic attack, when you suddenly felt frightened, anxious, or extremelyuncomfortable?
1 2 3 (Go To F.1)

7. Were you ever afraid of going out of the house alone, being in crowds, standing in a line, or traveling on buses or trains? **1 2 3 (Go To F.6)**

8. Is there anything that you have been afraid to do or felt uncomfortable doing in front of other people, like speaking, eating, or writing? **1 2 3 (Go To F.9)**

9. Are there any other things that you have been especially afraid of, like flying, heights, seeing blood, closed places, or certain kinds of animals or insects? **1 2 3 (Go To F.13)**

10. Have you ever been bothered by thoughts that didn't make any sense and kept coming back to you even when you tried not to have them? **1 2 3 (Go To F.17)**

11. Was there ever anything that you had to do over and over again and couldn't resist doing, like washing your hands or checking something several times to make sure you'd done it right? **1 2 3 (Go To F.18)**

12. In the last six months, have you been particularly nervous or anxious? **1 2 3 (Go To F.26)**

13. Have you ever had a time when you weighed much less than other people thought you ought to weigh?
1 2 3 (Go To H.1)

14. Have you ever had eating binges during which you felt that your eating was out of control?
1 2 3 (Go To H.3)

15a. Over the last several years, what has your physical health been like?

15b. How often have you had to go to the doctor because you were not feeling well? (What for?)

IF YES: Was the doctor always able to find out what was wrong, or were there times when the doctor said there was nothing wrong but you were still convinced that something was wrong?

15c. Do you worry much about your physical health? Does your doctor think you worry too much?

15d. Some people are very bothered by the way they look. Is this a problem for you?

(If answers to 15a-d indicate possibility of somatoform disosorder, circle 2 or 3 & Go To G.1) **1 2 3**

NOW I'M GOING TO ASK YOU ABOUT SOME UNUSUAL EXPERIENCES THAT PEOPLE SOMETIMES HAVE.

16a. Did it ever seem that people were talking about you or taking special notice of you? **1 2 3 (Go To B.1)**

16b. What about receiving special messages from the TV, radio, or newspaper, or from the way things were arranged around you? **1 2 3 (Go To B.1)**

16c. What about anyone going out of the way to give you a hard time, or trying to hurt you? **1 2 3 (Go To B.1)**

16d. Did you ever feel that you were especially important in some way, or that you had special powers to do things that other people couldn't do? **1 2 3 (Go To B.1)**

16e. Did you ever feel that something was terribly wrong with you physically even though your doctor said nothing was wrong? **1 2 3 (Go To B.1)**

16f. Did you ever feel that you had committed a crime or done something terrible for which you should be punished? **1 2 3 (Go To B.1)**

17. Did you ever hear things that other people couldn't hear such as noises, or the voices of other people talking? **1 2 3 (Go To B.4)**

18. Did you ever have visions or see things that other people couldn't see (were you awake at the time)? **1 2 3 (Go To B.5)**

19. What about strange sensations in your body or on your skin? **1 2 3 (Go To B.5)**

20. What about smelling things that other people couldn't smell? **1 2 3 (Go To B.5)**

Appendix G

Medical Information Form

MEDICAL INFORMATION FORM

A. Identifying Data:

Name: _____ Home phone: ( ) _____

Address: _____ Marital Status: _____

_____ Date of Birth: _____

Occupation: _____ Work phone: ( ) _____

Married ____Yes

Single, never married ____Yes

Divorced ____Yes

Widowed ____Yes

B. 1. Do you receive regular medical care from a physician or clinic? ☐ No ☐ Yes

If yes, please provide the following information:

Name of Physician or Clinic: _____

2. Have you been evaluated by a urologist? ☐ No ☐ Yes

If yes, please provide the following information:

Name of Physician or Clinic: _____

3. Have you ever had to be hospitalized? ☐ No ☐ Yes If yes, complete the following:

Year	Doctor's Name	Name of Hospital	Reason
_____	_____	_____	_____
_____	_____	_____	_____

4. Have you ever had surgery, or been advised to have surgery? ☐ No ☐ Yes If yes, complete the following:

Year	Doctor's Name	Name of Hospital	Name of Operation or Procedure
_____	_____	_____	_____
_____	_____	_____	_____

No. _____

C. Personal Medical History:

1. Have you ever been told you had any of the following medical conditions?

	NO	YES	When/Explain	If yes, are you currently being treated or followed for these problems
Heart Disease				
High Blood Pressure				
Diabetes or High Blood Sugar				
Cancer				
Thyroid Disease				
Depression				
Alcoholism				
High Cholesterol				
Low Testosterone				
Other Hormone Problem				
Prostate problem, prostatitis, etc.				
Anxiety or Stress				
Spinal cord, neck or head injury				
Back problems				
Drug Addiction				
Gall Bladder Problems				
Digestive Disease				
Kidney Disease				
Peptic Ulcers (stomach ulcers)				
Colitis				
Meningitis or Encephalitis				
Tuberculosis				
Stroke				
Rheumatic Fever				
Asthma				
Birth Defects				
Gout				

(a) Have you ever had any other disease? ☐ No ☐ Yes If yes, explain: _____

_____

_____

(b) What is your current weight?_____ lbs. __estimate __actual

(c) What is the most you have ever weighed? _____ lbs. When? _____

(d) Have you recently lost or gained any weight? ☐ No ☐ Yes

(e) Can you explain any recent weight loss or gain? _____

_____

2. **Have you recently had any of the following tests?**

	No	Yes	When	Results
Physical Exam				
Blood Tests				
Hormone Levels				
Electrocardiogram (EKG)				
Blood Flow in penis (Doppler Study)				
Penis Injection (Papaverine)				
Nocturnal penile tumescence				
Other				

3. **Are you in the habit of using any of the following?**

	Amount Currently Using	Most Ever Used	When Stopped Using
Coffee (cups/day)			
Cigarettes (packs/day)			
Alcohol (amount and types of alcohol used daily)			
Vitamins			
Sleeping Pills			
Aspirin			
Laxatives			
Diet Pills			

4. **Are you currently on any medication?** ☐ No ☐Yes If yes, please give name and dosage: _____

_____

5. **Have you ever used any of the following medications for your mood, nerves, sleep. pain, or energy level?**

(Circle the ones used.)

	No	Yes	When/How Long	How Much/Reason
Dilantin, Tegretol, L-Dopa, Cogentin, Artane				
Medication for anxiety , stress or nerves (Xanax, Valium, Librium, Serax, Dalmane. Tranxene, Ativan, etc.)				
Medication for depression (Prozac, Wellbutrin, Elavil, etc.)				
Lithium				
Thorazine, Mellaril, Stelazine, Navane, Haldol, Prolixin Injection, Loxitane, Moban, Serentil				
Phenobarbital, Seconal, Tuinal, Other barbiturates				
Amphetamines, Ritalin, Other stimulants				
Codeine, Methadone, Percodan, Dilaudid, Talwin, Darvon, Demerol, other prescription pain killers				
Other				

6. What type(s) of treatment have you tried for your sexual difficulties?

	No	Yes	When	How successful/helpful? (Please rate from 0-5, 0=no change) Please describe
Testosterone Injections				
Testosterone Patch				
Other hormone Replacement (Specify):				
Vacuum Pump (ErecAid)				
Penis Injection (Papaverine)				
MUSE				
Medication(s) (Specify):				
Surgery or Penile Implant				
Self-help books/videos				
Creams/Ointments				
Psychological Treatment (Sex Therapy, Marital Therapy)				
Other (Please Specify):				

D. Personal Psychiatric History:

1. Have you ever received any previous psychiatric or psychological evaluation or treatment? ☐ No ☐ Yes If yes, complete the following:

Year	Reason	Medication Used (if any)
_____	_____	_____
_____	_____	_____
_____	_____	_____

2. Have you ever attempted suicide in the past? ☐ No ☐ Yes If yes, complete the following:

Year	How did you attempt suicide?	What happened?
_____	_____	_____
_____	_____	_____
_____	_____	_____

E. Review of Your Current Health:

1. Do you have? or **Have you ever had?**	**No**	**Yes**		**No**	**Yes**
Lumps anywhere			Unusual excessive thirst		
Double vision or poor vision			Urine problems, blood in urine		
Difficulty hearing			Indigestion, gas, heartburn		
Fainting spells, blackout spells			Stomach pain or stomach ulcer		
Hernia			Groin or Penis Injury		
Sexually Transmitted Disease/HIV			Joint pain		
Convulsion			Diarrhea		
Paralysis			Constipation		
Dizziness			Vomiting, vomiting blood		
Headaches			Blood in stool		
Thyroid problem, goiter			Change in appetite or eating habits		
Skin problem			Trouble sleeping		
Cough or wheeze			Sexual problems		
Chest pain			Weight loss or weight gain		
Spitting up blood			Depression		
Shortness of breath at night or with exercise			Problems with memory, thinking, concentration		
Palpitation or heart fluttering			Suicidal thoughts		
Swelling of hands or feet			Weakness or tiredness		
Visual hallucinations			Other		

Please describe or explain any of the positive answers above

Appendix H

Authorization for Exchange of Information

SEXUALITY ASSESSMENT AND TREATMENT PROGRAM
Tracy Sbrocco, Ph.D., Director
Uniformed Services University of the Health Sciences
Department of Medical and Clinical Psychology
4301 Jones Bridge Road
Bethesda, Maryland 20814-4799
301-295-3270

AUTHORIZATION FOR EXCHANGE OF INFORMATION

I hereby authorize the Sexuality Assessment and Treatment Program and

(Doctor/Agency) _____

(Address) _____

_____

to share with each other any and all information in their possession acquired in the course of evaluation and/or treatment of _____.
(Name of Client)

You may accept a photocopy of this authorization.

DATE: _____ SIGNED: _____

WITNESS: _____

CLIENT'S NAME: _____
(Please Print)

ADDRESS: _____

_____

BIRTH DATE: _____

SOCIAL SECURITY #: _____

Appendix I

Organicity Rating Scale

Organicity Rating Scale

0 = No pathology found; normal

1 = Some deviation from normal but significance unknown; probably not significant

2 = One or more deviations from normal; might be significant

3 = Deviation probably significant or of sufficient magnitude to be important

4 = Significant deviation which is probably a contributory factor in erectile disorder

5 = Definite evidence of pathology directly related to erectile disorder

EXAMPLES:

5 = Marked atherosclerosis with decreased penile flow and no bc reflex

4 = Decreased penile flow; many medications

3 = Atherosclerosis and hypertension

2 = Some medications

1 = Overweight, hypertensive, endomorph

Appendix J

Psychogenic Rating Scale

Psychogenic Rating Scale

0 = Psychogenic factors do not appear to be involved (i.e., no psychogenic factors found or possible presence of one or two minor factors that have no temporal or other relationship to problem onset).

1 = Psychogenic factors are probably not significant or significance is unknown (i.e., one or more minor factors coupled with positive sexual functioning factors).

2 = Psychogenic factors might be significant (i.e., multiple minor factors, with at least one showing clear temporal or other relationship to problem onset; or presence of one major factor that doesn't clearly relate to onset coupled with numerous positive functioning factors).

3 = Psychogenic factors are probably significant or of sufficient magnitude to be important (i.e., presence of one clear major factor that doesn't directly relate to problem onset; not a significant number of positive functioning factors).

4 = Psychogenic factors are significant and probably at least a contributing factor (i.e., presence of one major or many minor factors that either don't directly relate to problem onset or are in the presence of positive functioning factors that directly lessen their impact).

5 = Psychogenic factors are definitely involved and appear to be the causative or maintaining factor in the dysfunction (i.e., presence of a clear major contributing factor with no positive sexual functioning factors that would directly lessen this; a clear relationship of the major factor to problem onset).

Appendix K

Beck Depression Inventory

BECK INVENTORY

Name_____ Date_____

On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling the PAST WEEK, INCLUDING TODAY! Circle the number beside the statement you picked. If several statements in the group seem to apply equally well, circle each one. **Be sure to read all the statements in each group before making your choice.**

1 0 I do not feel sad.
1 I feel sad.
2 I am sad all the time and I can't snap out of it.
3 I am so sad or unhappy that I can't stand it.

2 0 I am not particularly discouraged about the future.
1 I feel discouraged about the future.
2 I feel I have nothing to look forward to.
3 I feel that the future is hopeless and that things cannot improve.

3 0 I do not feel like a failure.
1 I feel I have failed more than the average person.
2 As I look back on my life, all I can see is a lot of failures.
3 I feel I am a complete failure as a person.

4 0 I get as much satisfaction out of things as I used to.
1 I don't enjoy things the way I used to.
2 I don't get real satisfaction out of anything anymore.
3 I am dissatisfied or bored with everything.

5 0 I don't feel particularly guilty.
1 I feel guilty a good part of the time.
2 I feel quite guilty most of the time.
3 I feel guilty all of the time.

6 0 I don't feel I am being punished.
1 I feel I may be punished.
2 I expect to be punished.
3 I feel I am being punished.

7 0 I don't feel disappointed in myself.
1 I am disappointed in myself.
2 I am disgusted with myself.
3 I hate myself.

8 0 I don't feel I am any worse than anybody else.
1 I am critical of myself for my weaknesses or mistakes.
2 I blame myself all the time for my faults.
3 I blame myself for everything bad that happens.

9 0 I don't have any thoughts of killing myself.
1 I have thoughts of killing myself, but I would not carry them out.
2 I would like to kill myself.
3 I would kill myself if I had the chance.

10 0 I don't cry any more than usual.
1 I cry more now than I used to.
2 I cry all the time now.
3 I used to be able to cry, but now I can't cry even though I want to.

11 0 I am no more irritated now than I ever am.
1 I get annoyed or irritated more easily than I used to.
2 I feel irritated all the time now.
3 I don't get irritated at all by the things that used to irritate me.

12 0 I have not lost interest in other people.
1 I am less interested in other people than I used to be.
2 I have lost most of my interest in other people.
3 I have lost all of my interest in other people.

13 0 I make decisions about as well as I ever could.
1 I put off making decisions more than I used to.
2 I have greater difficulty in making decisions than before.
3 I can't make decisions at all anymore.

14 0 I don't feel I look any worse than I used to.
1 I am worried that I am looking old or unattractive.
2 I feel that there are permanent changes in my appearance that make me look unattractive.
3 I believe that I look ugly.

15 0 I can work about as well as before.
1 It takes an extra effort to get started at doing something.
2 I have to push myself very hard to do anything.
3 I can't do any work at all.

16 0 I can sleep as well as usual.
1 I don't sleep as well as I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up several hours earlier than I used to and cannot get back to sleep.

17 0 I don't get more tired than usual.
1 I get tired more easily than I used to.
2 I get tired from doing almost anything.
3 I am too tired to do anything.

18 0 My appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all anymore.

19 0 I haven't lost much weight, if any, lately.
1 I have lost more than 5 pounds.
2 I have lost more than 10 pounds.
3 I have lost more than 15 pounds.
I am purposely trying to lose weight by eating less. Yes_____ No_____

20 0 I am no more worried about my health than usual.
1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
2 I am very worried about physical problems and it's hard to think of much else.
3 I am so worried about my physical problems that I cannot think about anything else.

21 0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

Appendix L

Beck Anxiety Inventory

NAME _____ **DATE** _____

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by each symptom during the PAST WEEK, INCLUDING TODAY, by placing an X in the corresponding space in the column next to each symptom.

	NOT AT ALL	MILDLY It did not bother me much.	MODERATELY It was very unpleasant, but I could stand it.	SEVERELY I could barely stand it.
1. Numbness or tingling.				
2. Feeling hot.				
3. Wobbliness in legs.				
4. Unable to relax.				
5. Fear of the worst happening.				
6. Dizzy or lightheaded.				
7. Heart pounding or racing.				
8. Unsteady.				
9. Terrified.				
10. Nervous.				
11. Feelings of choking.				
12. Hands trembling.				
13. Shaky.				
14. Fear of losing control.				
15. Difficulty breathing.				
16. Fear of dying.				
17. Scared.				
18. Indigestion or discomfort in abdomen.				
19. Faint.				
20. Face flushed.				
21. Sweating (not due to heat).				

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Appendix M

Procedure for Physiological Assessment

Procedure for Physiological Assessment

Feedback Groups

When the subject was ready for the physiological assessment, the experimenter began by re-explaining the procedure to him. The subjects randomly assigned to the experimental feedback groups (negative, neutral, and inflated) were given the following explanation for the assessment: "We know that current sexual performance influences men's abilities to continue responding and to make predictions about future sexual performance. Men constantly evaluate how they are performing during sex, and their level of responding as compared to their expectations affects their confidence. Men use all kinds of information to evaluate their performance, such as how big their erection appears to be and the response of their partner. In this experiment, we provide an erection score on a monitor to let you know how big your erection is to help you evaluate your performance. The erection score is based on a number of factors such as size, rigidity, temperature, and blood flow. We are interested in finding out how knowing this information affects men's sexual responding, confidence, and predictions about future performance.

"You will watch a series of five-minute videotapes showing a man and woman having sex while we collect all the information we need for your erection score from the strain gauge around your penis. You will not be shown your erection score during the first five-minute session but you will see it during the following sessions. The erection score will be 'real time' meaning that it reflects your score at that exact time and will be displayed continuously throughout those entire five-minute sessions. In addition, you will be asked to predict what maximum score you think you can achieve prior to each session and how much confidence you have in that prediction. An average erection score for a man watching similar erotic videotapes is 12. Possible erection scores range from 0 to 24.

"Do you have any questions before we proceed?" The subject was told he may elect not to participate at any time without repercussions.

No-feedback Group

Subjects randomly assigned to the control (no-feedback) group were explained the following about the study: "We know that current sexual performance influences men's abilities to continue responding and to make predictions about future sexual performance. Men constantly evaluate how they are performing during sex, and their level of responding as compared to their expectations affects their confidence. Men use all kinds of information to evaluate their performance, such as how big their erection appears to be and the response of their partner. In this experiment, we provide an erection score on a monitor to let you know how big your erection is to help you evaluate your performance. The erection score is based on a number of factors such as size, rigidity, temperature, and blood flow. We are interested in finding out how knowing their erection score affects men's sexual responding, confidence, and predictions about future performance.

"You will watch a series of five-minute videotapes showing a man and woman having sex while we collect all the information we need for your erection score from the strain gauge around your penis. However, you have been randomly assigned to a group that will not be shown your erection score while you watch the erotic videotapes. This way we can compare the results of men who see their erection score with men who don't.

"Do you have any questions before we proceed?" The subject was told he may elect not to participate at any time without repercussions.

All Subjects

The subject was then escorted to the sound attenuated chamber where he was instructed how to measure the circumference of the mid-shaft of his penis with a paper strip. The experimenter left the room while the subject disrobed from the waist down and took this measurement. The subject was instructed to call the experimenter, who was in the adjacent control room, via an intercom when he was ready and had his clothes back on. The experimenter returned and asked the subject to remove his shirt so that electrodes could be attached to his chest for heart rate measurement. The subject then had a seat on the paper-covered recliner while a technician attached the 7 electrodes. Meanwhile, the experimenter returned to the control room with the strip of paper used to measure the subject's flaccid penis. He measured the distance of the penile circumference in mm with a ruler and selected a mercury-in-rubber strain gauge that is at least 5-10mm smaller than the flaccid circumference. The experimenter calibrated the polygraph to the strain gauge using a calibration cone. He returned to the sound chamber and provided the subject with the strain gauge. The subject was instructed how to attach the strain gauge around the mid-shaft of his penis. The experimenter left the room while the subject disrobed from the waist down, attached the strain gauge, and sat on the paper-covered reclining chair. The experimenter returned to visually check to make sure the device was properly attached (i.e., around the mid-shaft of the penis and without twists) and placed a sheet of paper across the subject's lap to prevent him from seeing or touching his penis. If the strain gauge was not properly in place, the experimenter re-explained how to place the device and asked the subject to adjust it correctly. Once the gauge was in place, the subject completed the Erection Prediction Questionnaire on a clipboard. The subject was then told that an erotic videotape would begin on the monitor and continue for five minutes. He was instructed to imagine himself involved in the activity which he saw and was asked not to move the paper covering his lap or touch his genitals. After asking if he had any questions, the lights were dimmed and the experimenter left the room. The experimenter operated the equipment (polygraph and VCR) from the adjacent control room and monitored the subject via intercom. Penile circumference was measured on polygraph chart paper during the five minute erotic videotape.

Following the first film offset, the experimenter returned to the assessment room and raised the lights. He handed the subject a pencil and clipboard containing the Sexual Arousal Questionnaire. The experimenter then handed the subject assigned to an experimental group an Erection Score Prediction Questionnaire and told the subject "In a few minutes you will view another sexually explicit videotape for five minutes while we measure your sexual responding. Only this time we will show you in the corner of the video screen your "real time" erection score. Remember, your erection score is based on a number of factors including size, rigidity, temperature, and blood flow. An average erection score for a man watching a similar erotic videotape is 12. Possible scores range from 0 to 24. Write down on the Erection Score Prediction Questionnaire the maximum score you think you can achieve when you watch the next videotape and mark the level of confidence you have in that prediction and the maximum size erection you think you will achieve." Control subjects were told "In a few minutes you will view another sexually explicit videotape while we collect the same measurements for five minutes." All subjects were reminded to imagine being involved in the activities in the film and not to touch themselves. All subjects were asked to complete a questionnaire asking them to rate on a visual analog scale the maximum size erection they thought they could achieve during the film they were about to watch and how confident they were in that prediction. The experimenter asked the subject if he had any questions and after answering them, dimmed the lights and returned to the control room.

After the subject's penile circumference returned to baseline flaccidity, the second erotic videotape was started on the VCR. If the readout from the genital measure did not return to baseline levels, a return-to-baseline procedure was employed to bring the subject to his basal level. This strategy consisted of asking the subject to count backward by 7s from 100. However,

this procedure was rarely necessary given that the subject spent 5-10 minutes completing questionnaires between films.

While the videotape was played, an erection score was displayed for the experimental subjects. Each subject in a feedback group started out with an erection score of 0 and the number increased with incremental increases in penile circumference:

1. Negative Feedback Group. When the subjects in the negative feedback group reached their maximum erection (based on the previous film) they were given the feedback via the meter that their score was 6 points lower than their predicted score. The erection scores were only even numbers, given the limited range of stored memory on the video display apparatus. Because it was determined during a pilot study that most men reached maximum erection during the second film within 1 minute of when they reached it during the first film, subjects who did not reach maximum erection during the second film were shown their maximum erection score one minute after the point they reached maximum erection during the previous film.

2. Neutral Feedback Group. When the subjects in the neutral feedback group reached their maximum erection, they were given the feedback that they were at the level they predicted. The erection scores were only even numbers, given the limited range of stored memory on the video display apparatus. Subjects who did not reach maximum erection during the second film were shown their predicted erection score one minute after the point they reached maximum erection during the previous film.

3. Positive Feedback Group. When the subjects in the inflated feedback group reached their maximum erection, their meters reflected scores 4 points higher than they predicted. The erection scores were only even numbers, given the limited range of stored memory on the video display apparatus. Subjects who did not reach maximum erection during the second film were shown their predicted erection score plus 4 points one minute after the point they reached maximum erection during the previous film.

Following the second film offset, the experimenter returned to the sound chamber, raised the lights, and handed the control (no-feedback) subject a Sexual Arousal Questionnaire. Experimental groups received the Sexual Arousal and Feedback Questionnaire.

The experimenter then handed the subject assigned to a feedback group an Erection Score Prediction Questionnaire and told the subject "In a few minutes you will view another sexually explicit videotape for five minutes while we measure your sexual responding. Again we will show you in the corner of the video screen your "real time" erection score. Remember, your erection score is based on a number of factors including size, rigidity, temperature, and blood flow. An average erection score for a man watching an erotic videotape is 12 and possible scores range from 0 to 24. Write down on the Erection Score Prediction Questionnaire the maximum score you think you can achieve when you watch the next videotape and mark the level of confidence you have in that prediction and the maximum size erection you think you will achieve." No-feedback subjects completed an Erection Prediction Questionnaire asking them to rate on visual analog scales the maximum size erection they thought they could achieve during the next film and how confident they were in that prediction. After all subjects accomplished their respective prediction questionnaires, they were told there were no more films or measurements and were instructed to remove the strain gauge and Holter monitor electrodes and get dressed while the experimenter was out of the room.

Appendix N

Erection Prediction Questionnaire

Film Number:_____ Subject:_____

Erection Prediction Questionnaire

1. Mark on the line the maximum size erection you think you can achieve during the film you're about to watch:

|_____|

no erection half erection full erection

2. Mark on the line how confident you are that you can achieve the size of erection you predicted:

|_____|

no confidence medium confidence maximum confidence

Appendix O

Erection Score Prediction Questionnaire

Film Number:_____ Subject:_____

Erection Score Prediction Questionnaire

We know that current sexual performance influences men's abilities to continue responding and to make predictions about future sexual performance. Men constantly evaluate how they are performing during sex, and their level of responding as compared to their expectations affects their confidence. Men use all kinds of information to evaluate their performance, such as how big their erection appears to be and the response of their partner. In the following assessment, as information to help you evaluate your performance, an erection score will be provided for you on a monitor. The erection score is based on a number of important sexual factors such as penile circumference, length, volume, pulse, temperature, hardness, and blood flow. Most of this information is unavailable to men while they are engaged in sexual activity. We are interested in finding out how knowing this information affects men's sexual responding, confidence, and predictions about future performance. You will watch a five minute videotape showing a man and woman having sex while we collect all the information we need for your erection score from the strain gauge around your penis. The erection score will be "real time" meaning that it reflects your score at that exact time and will be displayed continuously throughout the entire five minute session. At this time we would like you to predict what score you think you can achieve while you view the following five minute erotic videotape. An average erection score for a man watching similar erotic videotapes is 12. Possible scores range from 0 to 24.

1. Maximum erection score I will achieve: _____

2. Mark on the line how confident you are that you can achieve the score you just predicted:

|_____|

no confidence medium confidence maximum confidence

3. Mark on the line the maximum size erection you think you can achieve during the film you're about to watch:

|_____|

no erection half erection full erection

Appendix P

Sexual Arousal Questionnaire

Film Number:_____ Subject:_____

Sexual Arousal Questionnaire

1. Mark on the line how sexually aroused you felt during the film you just watched:

|_____|

no arousal medium arousal maximum arousal

2. Mark on the line how anxious, tense, or nervous you felt during the film you just watched:

|_____|

no anxiety medium anxiety maximum anxiety

3. Mark on the line how much confidence you had in your ability to maintain an erection during the film you just watched:

|_____|

no confidence medium confidence maximum confidence

4. Mark on the line the maximum size of your erection during the film you just watched:

|_____|

no erection half erection full erection

5. Mark on the line your level of attention to the film you just watched:

|_____|

no attention medium attention maximum attention

6. Mark on the line your level of attention to your body during the film you just watched:

|_____|

no attention medium attention maximum attention

7. Mark on the line how much control you had over your erection:

|_____|

no control medium control maximum control

8. Mark on the line how many negative-type thoughts you had during the film you just watched:

|_____|

no negative thoughts lots of negative thoughts

9. Mark on the line how much your thoughts interfered with your ability to maintain your erection:

|_____|

no interference medium interference maximum interference

10. Mark on the line how similar your response was (for example: erection, thoughts, arousal) during this lab experience compared to actual sexual situations:

|_____|

not at all similar very similar

11. List the thoughts you had during the film you just watched:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

Appendix Q

Sexual Arousal and Feedback Questionnaire

Subject: _____

Sexual Arousal and Feedback Questionnaire
(After Second Film)

1. Mark on the line how sexually aroused you felt during the film you just watched:

|_____|

no arousal medium arousal maximum arousal

2. Mark on the line how anxious, tense, or nervous you felt during the film you just watched:

|_____|

no anxiety medium anxiety maximum anxiety

3. Mark on the line how much confidence you had in your ability to maintain an erection during the film you just watched:

|_____|

no confidence medium confidence maximum confidence

4. Mark on the line the maximum size of your erection during the film you just watched:

|_____|

no erection half erection full erection

5. Mark on the line your level of attention to the <u>film</u> you just watched:

|_____|

no attention medium attention maximum attention

6. Mark on the line your level of attention to <u>your body</u> during the film you just watched:

|_____|

no attention medium attention maximum attention

7. Mark on the line how much control you had over your erection:

|_____|

no control medium control maximum control

8. Mark on the line how many negative-type thoughts you had during the film you just watched:

|_____|

no negative thoughts lots of negative thoughts

9. Mark on the line how much your thoughts interfered with your ability to maintain your erection:

|_____|

no interference medium interference maximum interference

10. Mark on the line how similar your response was (for example: erection, thoughts, arousal) during this lab experience compared to actual sexual situations:

|_____|

not at all similar very similar

11. Mark on the line how distracting the erection score was:

|_____|

no distraction medium distraction maximum distraction

12. Mark on the line the effect that the erection score had on your level of arousal:

|_____|_____|

decreased arousal no effect increased arousal

13. Mark on the line the effect that the erection score had on your level of anxiety, tension, or nervousness:

|_____|_____|

decreased anxiety no effect increased anxiety

14. Mark on the line the effect that the erection score had on your level of confidence in achieving and maintaining an erection:

|_____|_____|

decreased confidence no effect increased confidence

15. Mark on the line the effect that the erection score had on your ability to maintain an erection:

|_____|_____|

decreased ability no effect increased ability

16. Mark on the line the effect that the erection score had on your attention to the film:

|_____|_____|

decreased attention no effect increased attention

17. Mark on the line the effect that the erection score had on your attention to <u>your body</u>:

|_____|_____|

decreased attention no effect increased attention

18. Mark on the line the effect that the erection score had on your level of control over your erection:

|_____|_____|

decreased control no effect increased control

19. Mark on the line how accurate the erection score was:

|_____|_____|

underestimated accurate overestimated

20. Mark on the line how much control you had over your erection score:

|_____|

no control medium control maximum control

21. Mark on the line how much you tried to change your erection score:

|_____|

no effort medium effort maximum effort

22. Mark on the line how surprised you were by your erection score:

|_____|

no surprise medium surprise maximum surprise

23. List the thoughts you had during the film you just watched:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

Appendix R

Film Quiz

Patient:_____

Film Quiz

1. Where did the couple start out?
   a. On the floor
   b. On a waterbed
   c. On a couch
   d. Standing

2. What position was she in when he put her breast in his mouth?
   a. On her knees facing him
   b. Laying on her back
   c. Standing
   d. Laying over him

3. Which breast did he put in his mouth?
   a. Right
   b. Left

4. How many candles were on the dresser next to the bed?
   a. One
   b. Two
   c. Three
   d. None

5. Which hand did he use when he put his fingers in her vagina?
   a. Right
   b. Left

6. What position was she in when he performed oral sex on her?
   a. Standing
   b. Sitting
   c. On her stomach
   d. On her back

7. What did she put in her mouth when he performed oral sex on her?
   a. A dildo
   b. Her fingers
   c. The pillow case
   d. His fingers

8. On what finger was she wearing a ring?
   a. Right middle
   b. Right ring
   c. Left middle
   d. Left ring

9. How was he positioned when she performed oral sex on him?
   a. Sitting up on the bed
   b. Standing
   c. Laying on his back
   d. Laying on his side

10. How many hands did she use on his penis?
   a. One
   b. Two

11. What did he say to her while she was performing oral sex on him?
   a. "That feels good"
   b. "Take it all"
   c. "You do that so good"
   d. None of the above

12. What did the window coverings in the room look like?
   a. Striped curtains
   b. Solid-colored curtains
   c. Blinds
   d. No window coverings

13. What position was she in when he first put his penis in her vagina?
   a. On her back
   b. On her hands and knees
   c. Standing
   d. On her side

14. Where were her panties when he first put his penis in her vagina?
   a. Pulled down her legs
   b. Pushed to the side
   c. Unsnapped
   d. They were off

15. Did he kiss her while he was having intercourse with her?
   a. Yes
   b. No

16. What did her earrings look like?
   a. Diamond studs
   b. Gold studs
   c. Gold hoops
   d. She wasn't wearing earrings

17. What was the last position the couple was in when the film ended?
   a. She was on her back
   b. She was on her hands and knees
   c. She was standing
   c. She was on her side

18. What was she wearing at the end of the film?
    a. A teddy
    b. Panties
    c. A top
    d. Nothing

19. Where was her head positioned at the end of the film?
    a. On a pillow
    b. Against the headboard

20. What object was on the dresser next to the bed?
    a. A television set
    b. A lamp
    c. A clock
    d. A plant